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DISEASES CAUSED BY BACTERIA AND FUNGI

PEARSON, J. K. L. (1959). **Autogenous toxoid vaccine in the prophylaxis of staphylococcal mastitis in cattle.**—*J. Dairy Res.* **26**, 9-16. 3019

In a herd with a high incidence of staphylococcal mastitis, i/m inoculation with 4 doses of 3-5 ml. at weekly intervals of an autogenous vaccine/toxoid prepared from coagulase-positive strains of *Staph. aureus* was performed on 25 randomly selected first or second calving cows. Revaccination was performed with 5 ml. every 6 months. Quarter milk samples were tested every 4-6 weeks and results compared with those from 18 controls. During the first 18 months, major staphylococcal infections were present in only 1.9% of the samples from the vaccinated cows compared with 8.1% in the controls, and only one clinical case of staphylococcal mastitis was observed compared with 9 in the controls. In the next 12 months, although subclinical infections remained at a lower level in the vaccinated cows, 8 clinical cases occurred compared with 5 in the controls. Whiteside reactions were associated only with prolonged infection of any grade. No constant relationship was observed between blood antitoxin titres and staphylococcal udder infections.—A. ACKROYD.

PILLET, J., GIRARD, O., DUTHEIL, H. & ORTA, B. (1959). Mammite staphylococcique de la brebis et vaccination locale. [Local immunization of sheep against staphylococcal mastitis.]—*Ann. Inst. Pasteur* **96**, 591-600. [English summary modified.] 3020

The authors had demonstrated that local immunization (by injection into the teat duct) protected animals against a massive challenge 14 days to 3 weeks later [*V.B.* **29**, 2313].

The duration of the protection was short: it significantly decreased after one month, and disappeared after 48 days. The number of injections should not be less than three, otherwise the protection is insufficient.

The third and fourth injections can be re-

placed by intramuscular injections; but the protection is not as effective as after four injections into the teat duct.

A single booster injection when immunization has significantly decreased, induces a high resistance to the challenge.

MONDINI, S. & QUAGLIO, G. L. (1959). La stafilococcosi dei volatili in genere e dei polli in particolare. Rassegna bibliografica. Osservazioni cliniche, microbiologiche ed anatomo-patologiche. Prove sperimentali. [*Staphylococcus infection of fowls.*]—*Zooprofilassi* **14**, 79-122. [Summaries in English and French.] 3021

Staphylococcal infections of domestic and wild birds described during the last 80 years or so are reviewed. In the majority of cases osteoarthritis is a prominent feature. Over 100 outbreaks of the disease, which is widespread in Italy where it is termed "putrid wing" or "wing gangrene", have been investigated. The epizootiological, clinical, pathological and microbiological aspects are described. The disease was reproduced in chickens aged 35-50 days by i/v or s/c inoculation or by scarification. Treatment and control are discussed. [See also *V.B.* **27**, 1325]—T.E.G.R.

HOFFMANN, G. (1959). Zur Frage der Desinfektion von *Staphylococcus aureus* haemolyticus. [Effective disinfection against haemolytic *Staphylococcus aureus*.]—*Berl. Münch. tierärztl. Wschr.* **72**, 90-92. [Summary in English.] 3022

3% NaOH killed 9 strains of *Staph. aureus* within 5 min. at 50° C. 2% "Tego 51" killed them after 10 min. 5% "P₃-MKS" and 5% chloramine failed to inactivate them in 10 min. 6% "Valvanol" was ineffective at 18° C.

—M.G.G.

WHITE, A. C., FOSTER, F. & KNIGHT, V. (1959). Propagation of staphylococcal phages in

liquid medium.—*Antibiot. & Chemother.* 9, 81-86. [Summary in Spanish p. 125. Authors' summary modified.] 3023

24 staphylococcal phages used in phage typing could be propagated as well in heart infusion broth as in solid agar media if 0.004 M/litre of calcium were added and incubation prolonged.

GUALLINI, L. & LEALI, L. (1959). Ricerche sulla citologia del latte mastitico. Nota II—Il significato della formula citologica. [Cell count in milk from cows with mastitis. II. Its importance.]—*Arch. Vet. Ital.* 10, 1-11. [Summaries in English, French and German.] 3024

The differential cell count was made on 120 milk samples from bacteriologically and cytologically sound quarters during the first or fifth lactation and on 60 from infected quarters. In infected milk there was significant increase in degenerate (D) cells and a non-significant increase in neutrophile polynuclear (P) cells; these increases were at the expense of the epithelial (E) cells and mononuclear (M) leucocytes (lymphocytes and monocytes) of which there is a significant reduction in infected milk. It is, therefore, suggested that the formula M/P should be modified to M+E/P+D, which would enhance the diagnostic value of the cell count in the sense that values below 0.6 would indicate infection. This was observed in 90% of infected samples, *i.e.*, there was a margin of error of 10% (mostly in milk from cows in advanced lactation). On the other hand the test was of value also in the case of samples taken during the first 8 days of lactation, when the cell count and bacteriological examination are not normally reliable indexes.—T.E.G.R.

MINAMIMOTO, S., SHIBATA, T. & ISHII, F. (1959). [Etiological studies on bovine mastitis. I. Bacteriological examination on bovine udders collected from slaughterhouse.]—*Bull. Nat. Inst. Anim. Hlth, Tokyo* No. 37, pp. 87-96. [In English. Summary in Japanese pp. 85-86. Authors' summary modified.] 3025

The authors studied the bacterial flora of the teats, lactiferous sinuses and mammary gland of 150 cows. Tables show the relationship between bacteria and macroscopic and microscopic changes in the gland, and the distribution of staphylococci and streptococci in different parts of the udder. Inflammation appeared to be associated with bacteria which produced hyaluronidase.—R.M.

V. HEIMBURG, W. D. (1959). Über die Eigenblutbehandlung der Mastitis beim Rind.

[Autohaemotherapy in bovine mastitis.]—*Tierärztl. Umsch.* 14, 42-43. 3026

Cows with sub-acute mastitis were treated by stripping the affected quarter and introducing, through a spray nozzle, 10-18 ml. of blood taken from the jugular vein. The quarter was stripped again 24 hours later and then 4-5 times daily until the secretion became normal. Affected quarters returned to normal lactation in 22 of 32 cases.—M.G.G.

BERGER, U. (1959). Experimentelle Grundlagen zur Behandlung von Streptokokkeninfektionen mit Nitrofurazon. [Experimental studies on nitrofurazone therapy of streptococcal infections.]—*Zbl. Bakt. I. (Orig.)* 174, 175-183. [Summaries in English, French, Spanish and Russian. English summary modified.] 3027

103 strains of β -haemolytic streptococci were tested *in vitro* for their nitrofurazone sensitivity. Strains of serological groups B and D proved to be resistant. The sensitivity of the other groups in decreasing order was: A, O, C, F, G, L, H, E.

LUND, E. & PETERSEN, K. B. (1959). Pneumococci in monkeys.—*Acta path. microbiol. scand.* 45, 309-318. [In English. Authors' summary modified.] 3028

Between 1955 and 1958 a total of 219 lab. monkeys died from pneumococcus pneumonia, in most cases caused by Type 19A. A fairly large but varying percentage of healthy monkeys were found to harbour pneumococci in nose and/or throat. From the staff in charge of the monkeys pneumococci were isolated occasionally and only from throat swabs.

HARTWIGK, H. (1959). Corynebakterien in Biopsie- und Samenproben vom Rind. [Corynebacteria in bovine biopsy and semen samples.]—*Berl. Münch. tierärztl. Wschr.* 72, 147-149. [Summary in English.] 3029

3-6 samples of semen were taken at weekly intervals from each of 4 bulls, and samples were obtained from the endometrium of about 12 cows both before and after slaughter. *C. pyogenes* was demonstrated in 2 semen samples from one bull, and in 2 biopsy samples. *C. renale* was demonstrated in a sample of endometrium taken after slaughter. No PPLO were found. *C. pyogenes* was isolated from a foetus aborted by another cow in the 8th month of pregnancy. Primary isolation on solid agar containing penicillin and thallium acetate followed by transfer to media free from them is recommended for the demonstration of corynebacteria.—M.G.G.

THAL, E. & RUTQVIST, L. (1959). **The pathogenicity of *Corynebacterium equi* for pigs and small laboratory animals.** — *Nord. VetMed.* 11, 298-304. [In English. Summaries in German and Swedish. Authors' summary modified.] **3030**

Two cases of pneumonia in pigs caused by *C. equi* are described. Pathogenicity tests were carried out on 18 pigs with a strain isolated from one case. No clinical signs or lesions were apparent in 7 pigs inoculated intravenously, intranasally, or orally. Three of 5 pigs inoculated s/c or i/m developed abscesses at the site of injection. When examined after 2-5 weeks, all 6 pigs inoculated intratracheally showed no clinical signs but had extensive pneumonic lesions resembling those seen in the spontaneous cases.

Thirteen strains from pigs and foals were highly pathogenic for mice inoculated intraperitoneally and intranasally.

Twelve of 19 guinea-pigs inoculated i/p with 1 or 2 ml. *C. equi* suspension died in 1-16 days. Lesions were not demonstrated in the survivors (30-day observation period). The organism was isolated from the spleen and heart blood of many of these animals.

KUME, T., SASAKI, N. & MURASE, N. (1959). **[Studies on a sudden outbreak of bacillary pyelonephritis in cattle. Clinical, bacteriological, and pathological observations on natural cases.]**—*J. Jap. vet. med. Ass.* 12, 119-125. [In Japanese. English summary modified.] **3031**

Diphtheroid bacilli were isolated from affected cattle. They were classified into two types according to their characters. One (type A) was, and the other (type B) was not, identical with *C. renale*.

TURNER, G. C. & WILLIS, A. T. (1959). **Inactivation of spores of *Bacillus anthracis* by γ -radiation.** — *Nature, Lond.* 183, 475-476. **3032**

Goat hair contaminated with 8 strains of *B. anthracis* was sterilized by 1.5×10^6 rad of γ -radiation. A minimum safe dose of 2.0×10^6 rad is recommended for the inactivation of *B. anthracis* in imported goat hair.—M.G.G.

BENNETT, E. O., PETERSON, G. E. & WILLIAMS, R. P. (1959). **Penicillin sensitivity as compared with nucleic acid phosphorus content of virulent and avirulent strains of *Bacillus anthracis* and *Bacillus cereus*.** — *Antibiot. & Chemother.* 9, 115-120. [Summary in

Spanish p. 128. Authors' summary modified.] **3033**

Virulent strains were uniformly sensitive to penicillin. They had in general a greater deoxyribonucleic acid content, lower ribonucleic acid/deoxyribonucleic acid ratio, and greater penicillin sensitivity than avirulent strains.

Bacillus cereus resembled avirulent anthrax bacilli in its resistance to penicillin and nucleic acid content.

AWAD, F. I., KARIB, A. A. & FAWI, M. T. (1959). **Some observations on tuberculosis among cattle in the Sudan.**—*Zbl. VetMed.* 6, 180-184. [In English. Summaries in French, German and Spanish.] **3034**

In tuberculin tests of 14 herds of 1774 dairy cattle, 16% of cattle in the south of the country were positive and 2.4% in the north. The higher incidence in the south may be due to crowding in unventilated huts during the wet season, and to smoke fires burning continuously to repel flies.—M.G.G.

LAUTERBACH, D. (1959). **Intrakutane Tuberkulinprobe, Rindertuberkulose und unspezifische Reaktionen.** [The tuberculin test, bovine tuberculosis, and non-specific reactions.]—*Dtsch. tierärztl. Wschr.* 66, 121-126. [Summary in English.] **3035**

Results obtained by testing of cattle with both mammalian and avian tuberculin, and non-specific reactions were discussed. In bovine and avian types of infection the homologous tuberculin as a rule produced the stronger reaction but a differentiation between human and bovine-type infection in this way was not possible. The necessity of standardization of tuberculins in Germany and the creation of a standard for reading reactions was stressed.

—E.G.

JOUBERT, L. (1959). **Tuberculose enzootique du vison.** [Endemic tuberculosis in mink.]—*Rev. Méd. vét.* 110, 113-134. [Summary in English.] **3036**

T.B. caused by the bovine type of bacillus occurred in 3 mink farms supplied with meat from tuberculous cattle. The outbreaks were severe because of aerial transmission of the infection. They were eradicated within 3 years by sanitary precautions and slaughter or isolation of infected animals.—M.G.G.

FRANCIS, J. (1959). **Tuberculosis of animals and its transmission to man.**—*Vet. Rec.* 71, 474-476. [Author's summary modified.] **3037**

It is shown that bovine-type infection does

not persist as an epidemic in any species except cattle, unless it is constantly renewed from a bovine source.

The spread and control of bovine TB. are briefly reviewed. Early Acts of Parliament from 1885 onwards gave little or no control over the safety of milk, and the Tuberculosis Order of 1909 was not effectively introduced until 1925. Although in 1905 the work of the British Royal Commission had clearly shown the danger of bovine-type infection to man, it was not until the 1930's that there was any strong demand for pasteurization, and only in 1949 that regulations for the compulsory pasteurization of milk were introduced.

The Attested Herds Scheme was introduced in 1935 and the Area Eradication Plan for Tuberculosis in 1950. There were, in March 1957, 7.4 million cattle in Attested Areas or Areas undergoing eradication, out of a total cattle population of some 9 million.

RUNYON, E. H., SELIN, M. J. & HARRIS, H. W. (1959). **Distinguishing mycobacteria by the niacin test.**—*Amer. Rev. Tuberc.* **79**, 663-665. [Authors' summary modified.] **3038**

A modification of the test for niacin described by Konno *et al.* [*V.B.* **28**, 2729] is described. This procedure is easier, gives more reliable results with cultures on solid medium, and is a useful means for distinguishing human type tubercle bacilli from most other mycobacteria.

LIND, A. (1959). **Serological studies of mycobacteria by means of the diffusion-gel technique. 1. Preliminary investigations.**—*Int. Arch. Allergy* **14**, 264-280. **3039**

Relationships between mycobacteria of different species, the presence of precipitins in tuberculin, and the precipitin response of rabbits after immunization or infection were studied by means of the agar diffusion technique of Ouchterlony. Different strains of bacilli gave different results, but in general the precipitin pattern of tubercle bacilli was quite different from that of acid-fast saprophytes, although they shared one antigenic factor.—R.M.

HIRSCH, A., CATTANEO, C. & MAGGINI, P. (1959). Über den Aufbau der Mycobakterien. III. Der Nachweis von Stoffwechselvorgängen mittels elektronenoptischer Untersuchungen von Ultradünnschnitten der Zellen verschiedener Mycobakterienspecies (Reduzierung von 2,3,5-Triphenyl-tetrazoliumchlorid). [**Structure of mycobacteria. III. Demonstration of metabolic processes by**

electron microscopy.].—*Zbl. Bakt. I. (Orig.)* **174**, 514-521. [Summaries in English, French, Spanish and Russian. English summary modified.] **3040**

Ultra-histological methods were applied to the investigation of metabolic changes within the protoplasm of bacterial cells. The different incorporation of formazan, an intracellular reduction product of triphenyltetrazolium chloride, could be demonstrated. This cyto-morphological technique was used to differentiate between parasitic and saprophytic mycobacteria.

GRAYSON, A. R. & LETTS, G. A. (1958). **Johne's disease in Victorian cattle.**—*Aust. vet. J.* **34**, 147-151. **3041**

The occurrence and distribution of Johne's disease in Victoria from 1925 to 1956 are reported, and a marked increase in cases since 1950 is observed. An attempt is made to correlate incidence with climate, pasture and soil types.

—W. E. LAWRENCE.

BOGNÁR, K. & KUCSERA, G. (1959). Infektionsversuche mit Mandelskarifikation zur Herbeiführung von Schweinerotlauf. [**Experimental swine erysipelas by scarification of tonsils.**].—*Acta vet. Acad. Sci. hung.* **9**, 55-56. [In German.] **3042**

Culture of virulent *Erysipelothrix rhusiopathiae* was rubbed into the scarified tonsils of 43 pigs, 29 of which had been immunized 3 weeks previously with different adsorbate vaccines. Fever developed in all except one of the unprotected pigs, and 11 had symptoms of erysipelas. None of the immunized pigs showed symptoms.—M.G.G.

FORŠEK, Z., ZELJKO, M. & ROMIĆ, Ž. (1959). **Interference of anti-hog cholera hyperimmune serum with the immunity in mice vaccinated against swine erysipelas with adsorbed bacterin.**—*Amer. J. vet. Res.* **20**, 558-561. [Authors' summary modified.] **3043**

Immunity against swine erysipelas, following inoculation of killed vaccine, was less solid in areas of Yugoslavia where pigs had been previously vaccinated simultaneously against erysipelas and swine fever (virus-serum method).

Tests on mice showed that 10 of 11 batches of anti-swine fever serum contained antibodies against erysipelas. One lot had a titre of 4.65 immunity units and was capable of lowering the immunizing capacity of commercial adsorbed vaccine by 47%.

Since anti-swine fever serum, being homologous, is eliminated slowly, vaccination for

erysipelas should either be postponed for at least two weeks after its use, or a slowly adsorbed erysipelas vaccine should be used.

VAN DORSSSEN, C. A. & JAARTSVELD, F. H. J. (1959). Spontane infectie van veldmuizen met *Erysipelothrix muriseptica* (Von Holzhausen 1927) comb.nov. [**Spontaneous infection of voles with *Erysipelothrix muriseptica*.**] — *Tijdschr. Diergeneesk.* **84**, 593-607. [In Dutch. Summaries in English, French and German.] **3044**

Deaths among a colony of *Microtus arvalis* were investigated and *E. muriseptica* [*Corynebacterium murisepticum*] was isolated from 33 of 47 carcasses. The cultural, biochemical and pathogenic properties and nomenclature of the organism were discussed.—R.M.

KUJUMGIEV, I. [KUYUMDZHIEV, I.] (1959). Eine einfache Methode zur raschen Unterscheidung der *Listeria monocytogenes* von *Erysipelothrix rhusiopathiae*. [**Prontosil for rapid differentiation of *E. monocytogenes* from *E. rhusiopathiae*.**] — *Zbl. Bakt. I. (Orig.)* **174**, 282-286. [Summaries in English, French, Spanish and Russian. English summary modified.] **3045**

This method was based on the ability of *Listeria* to decolorize Prontosil when growing in broth. *E. rhusiopathiae* did not change the colour of the medium.

NILSSON, A. & KARLSSON, K. A. (1959). *Listeria monocytogenes* isolations from animals in Sweden during 1948 to 1957.—*Nord. VetMed.* **11**, 305-315. [In English. Summaries in German and Swedish. Authors' summary modified.] **3046**

Listeria was isolated on 141 occasions from twelve animal species out of approximately 75,000 bacteriological examinations in Stockholm during 1948 to 1957. It was isolated from 47 poultry without lesions suggestive of listeriosis. All of the 20 strains which were typed belonged to serotype 1. Pathological lesions seen in various species are described.

PATOČKA, F., SCHINDLER, J. & MÁRA, M. (1959). Studies on the pathogenicity of *Listeria monocytogenes*. I. Protein substance isolated from cells of *Listeria monocytogenes* enhancing listeric infection.—*Zbl. Bakt. I. (Orig.)* **174**, 573-585. [In English. Summaries in French, German, Spanish and Russian.] **3047**

PATOČKA, F., MÁRA, M. & SCHINDLER, J. (1959). Studies on the pathogenicity of *Listeria monocytogenes*. II. Influence of substances isolated

from cells of *Listeria monocytogenes* on experimental listeriosis in white mice. — *Ibid.* 586-593. [In English. Summaries in French, German, Spanish and Russian.] **3048**

I & II. By chemical and mechanical disintegration of the organisms a protein substance was obtained and was partly purified by methanol and ammonium sulphate precipitation. This substance enhanced *Listeria* infection in mice. Nucleoproteins, polysaccharide fractions and acid extracts of bacterial protein did not enhance infection.—R.M.

UTOJO, R. P. (1958). Penjelidikan tentang sifat-sifat biologik dari berbagai variant *Pasteurella septica* di Indonesia. [**Biological properties of *Pasteurella septica* variants in Indonesia.**]—*Thesis, Bogor* pp. 132. [In Indonesian. Summary in English.] **3049**

A study of the antigenic, biochemical, physical and pathogenic properties of 46 Indonesian strains of *Pasteurella* (20 from buffaloes, 12 from cattle, 7 from pigs, 4 from fowls, and one from a horse.)—R.M.

ERICSON, C. & JUHLIN, I. (1959). A case of *Pasteurella multocida* infection after cat bite. — *Acta path. microbiol. scand.* **46**, 47-50. [In English. Authors' summary modified.] **3050**

Localized *Past. septica* infection of a finger resulting from a cat bite was reported; necrotizing tendovaginitis resulted in permanent loss of function. The clinical and bacteriological findings were discussed. Antibodies against the organisms were demonstrated by different methods. The importance of an early bacteriological diagnosis of animal bite wounds is stressed. The authors' views on the therapy are given.

GEURDEN, L. M. G. (1959). Pathogenic *coli's* in veterinary pathology.—*Proc. XVIIth Int. vet. Congr., Madrid* **1**, 247-253. [Summaries in French, German and Spanish. Author's summary modified.] **3051**

After a short survey of physiological and immunological properties of *coli* bacilli attention was drawn to diarrhoea in calves and other young animals, oedema disease in pigs, and coligranuloma in poultry. In each of these diseases different serotypes may be found and the same serotype may be present in many diseases. Variations in the course of infection depended on different stress factors and different immunological conditions; although in diarrhoea endotoxin of *E. coli* appeared to play a predominant role.

THAL, E., BANE, A. & BAKOS, K. (1959). *Escherichia coli* als Ursache von Paarungsinfektionen bei Rindern. [*Escherichia coli* as cause of genital infection in cattle.]—*Proc. XVth Int. vet. Congr., Madrid 2*, 523-525. [In German.] 3052

The genital organs of 29 bulls, 30 cows and 79 heifers were examined. Haemolytic corynebacteria were often isolated from the preputial washings and semen of both normal bulls and bulls with genital infections, *C. renale* being isolated in large numbers from the prepuce. While the uterus and vagina of healthy calves were free from bacteria, in the vestibulum numerous streptococci of the viridans group were often found, but no diphtheroid or coliform bacteria.

Four bulls had numerous *E. coli* in the prepuce and semen. The 4 strains differed serologically. Seven maiden heifers mated to these 4 bulls developed a transient vestibulovaginitis 4-6 hours later, but *E. coli* was not isolated. Similar symptoms developed in heifers inoculated in the vestibulum and vagina with filtrates of the *E. coli* cultures, but not in heifers given the filtrates mixed with homologous immune sera. Rabbits inoculated i/d with the filtrates showed reddening and swelling of the skin, but were unaffected by the filtrates of other *E. coli* strains. The sera of most of 62 female cattle and 34 bulls agglutinated the toxic *E. coli* strains, but not other strains of *E. coli*.—M.G.G.

STAMATOVIĆ, S. & MIHAJLOVIĆ, B. (1959). Izolovanje hemolitičnog soja *E. coli* kod edemske bolesti svinja. [*Isolation of haemolytic Escherichia coli* from porcine oedema disease.]—*Vet. Glasn.* 13, 15-18. [In Croat. Summary in English.] 3053

A β -haemolytic strain of *E. coli* was isolated from the intestinal wall of four pigs which had died from oedema disease. A dose of 0.4 ml. of a six-hour broth culture, given i/v or i/p, but not s/c, killed mice within 48 hours. —E.G.

NAMIOKA, S., URUSHIDO, M. & SAKAZAKI, R. (1958). *Escherichia coli* isolated from transmissible gastro-enteritis in pigs. — *Jap. J. med. Sci. Biol.* 11, 141-151. 3054

E. coli was isolated from the stomach, small intestine and mesenteric lymph nodes of 7 pigs, 5 months old (4 spontaneous cases and 3 artificially infected by dosing with the virus of transmissible gastro-enteritis of swine). The isolates belonged to a restricted number of serological O groups. Cultures from the colon yielded smaller numbers of these types of *E.*

coli than of other types of *E. coli* that were found only there. The majority of the *E. coli* cultures from the small intestine produced enteritis in rabbits; those isolated only from the colon did not. The authors considered that the toxic *E. coli* play a secondary role in viral diarrhoea in pigs, by moving from the colon (where they may be present in normal individuals) to the small intestine where they aggravate enteritis.—F.E.W.

MALYAVIN, A. G. (1959). [Specific prophylaxis of paratyphoid diseases in calves.] — *Veterinariya, Moscow* 36, No. 1 pp. 44-47. [In Russian.] 3055

Calves should be inoculated with paratyphoid vaccine during the first five days of life, because about 2% of calves inoculated later died, apparently as a result of allergic reaction to the vaccine. Bivalent immune serum against paratyphoid and *E. coli* should be used only for therapeutic purposes, as it influenced immunity conferred by subsequent vaccination. [The work on which these conclusions were based has been described in detail in *Trud. nauchno-kontrol. Inst. vet. Preparatov* 7, 242 (1957).] —R.M.

KOCH, A. L. (1959). Death of bacteria in growing culture. — *J. Bact.* 77, 623-629. [Author's summary modified.] 3056

In growing cultures of *Escherichia coli* under constant conditions, death of the bacterial cells followed by lysis is rare. If however, the cells are chilled and centrifuged, about 5% per hour of a variety of labelled cellular components are released into the culture medium in an ultrafiltrable form. This release of labelled materials is interpreted as the autolysis of cells killed by chilling and centrifugation. Certain of these labelled materials will be re-assimilated by the surviving organisms unless large pools of unlabelled materials are added. The study of death of cells by these techniques allowed the design of experiments to show that death under suitable growth conditions is uncommon.

SEELIGER, H. P. R. (1959). Jahresbericht über die Salmonellosen in Deutschland 1957. [Report on salmonellosis in Germany in 1957.] — *Zbl. Bakt. I. (Orig.)* 174, 327-347. 3057

This report lists serotypes associated with salmonella infection in human beings, domestic animals and wild animals during 1957, and discusses various factors concerned in epidemiology.—R.M.

KARASSZON, D. (1959). Paratyphus-járvány bányók között. [*Salmonella typhi-murium* infection in lambs.]—*Mag. állator. Lapja* 14, 56-58. [In Hungarian, Summaries in English and Russian.] 3058

An outbreak of paratyphoid due to *S. typhi-murium* amongst lambs (2 weeks to 3 months old) in a flock in Hungary, resulted in the death of 70 of 410 lambs within 3 months. The symptoms and P.M. findings are described, and the aetiology, therapy and the prevention of the disease are discussed.—A. SEBESTENY.

KAFEL, S. (1959). Problem higieny produktów zwierzęcych w próbach zastosowania bakteriofagów przy wtórnej salmonelozie świń. [*Food hygiene aspects of bacteriophage treatment of salmonellosis accompanying swine fever.*]—*Med. Wet., Warszawa* 15, 156-159. [In Polish. Summaries in English and Russian.] 3059

Pigs (5-6 months old) used for crystal violet vaccine production, received i/m, 24-48 hours after the injection of virus, 20 ml. of a phage concentrate produced by 7 phage types of *S. cholerae-suis*. The pigs were destroyed 7 days after virus injection and the skeletal muscles, lymph nodes, liver, spleen and kidneys were examined bacteriologically. *S. cholerae-suis* was recovered from 60 of 90 test pigs (66%) and from 79 of 90 controls (88%). Of the 450 organs cultured in each group 124 in the test group yielded *S. cholerae-suis* against 230 in the controls.—M. GITTER.

RAETTIG, H. (1959). Provokation einer Infektion durch Schutzimpfung. I. [*Provocation of infection by vaccination. I. Experiments with paratyphoid in mice.*]—*Zbl. Bakt. I. (Orig.)* 174, 192-217. [Summaries in English, French, Spanish and Russian. English summary modified.] 3060

White mice were infected orally with *S. typhi-murium*. When they were vaccinated subcutaneously with a homologous vaccine, containing heat-killed bacteria, the mortality rate of vaccinated animals increased quicker and gained higher values than that of unvaccinated controls. This provocation effect can be demonstrated statistically by the shortening of the time elapsing between infection and death.

The provocation effect can be produced with mice of different sensitivity, and with infections with strains of different virulence. It decreased with decreasing dose of antigen, and was more noticeable the later the vaccination during the incubation period.

PRITULIN, N. I. (1959). [Experimental salmonella infection in rabbits.]—*Veterinariya, Moscow* 36, No. 2 pp. 42-44. [In Russian.] 3061

P. studied susceptibility of rabbits and mice to infection with *S. cholerae-suis*, *enteritidis* and *typhi-murium* administered as aerosols or by parenteral and oral routes.—R.M.

SCHAAL, E. (1959). Schlachthofabwässer und ihre hygienische Bedeutung. [*Bacterial content of abattoir effluent.*]—*Berl. Münch. tierärztl. Wschr.* 72, 66-70. [Summary in English.] 3062

Samples of effluent taken over several months from the various sections of the Duisburg abattoir were examined for salmonella. From 54 samples salmonella belonging to 17 types were isolated, the tripe section giving the largest number. The majority of the strains were *S. newport*, *S. montevideo*, and *S. manchester*; *S. typhi-murium* and *S. dublin* occurred much less often, but the results showed that the effluent was a rich salmonella reservoir and also that the number of slaughter animals infected must be greater than generally accepted. When the drainage 3 km. below the entrance of the abattoir effluent into the general sewerage system was investigated, *S. paratyphi B*, almost certainly of human origin, was found in 40% of samples and a nearly similar percentage of salmonella of animal origin; these findings being of obvious epidemiological importance. When examinations were extended to tuberculosis, tubercle bacilli were found in 14 of 50 samples. The cattle slaughter hall gave the highest number of positives but on examination the drainage from the abattoir gave 28% positive, these findings being again of epidemiological importance. Organisms of swine erysipelas were found in 20% of samples from the pig slaughter hall. Thus since ordinary abattoirs have been shown to be a possible source of animal infection the risk is much greater in emergency, or isolation slaughter houses.—W. K. DUNSCOMBE.

YUSKOVEC, M. K. (1959). *Brucellosis of domestic animals and principles of its prophylaxis in the Soviet Union.*]—*Proc. XVIIth Int. vet. Congr., Madrid* 1, 327-335. [Summaries in French, German and Spanish. Author's summary modified.] 3063

In the U.S.S.R. eradication of brucellosis of domestic animals is a state task and compulsory for all departments and animal owners.

Until recently general prophylactic measures were employed against brucellosis in the U.S.S.R. By these means limitation of infec-

tion has been achieved and a number of regions have been freed from brucellosis. But experience showed that general prophylactic measures did not always provide a complete clearing of farms within a specified time; not infrequently considerable expense and labour was needed for control measures which greatly disturbed the economy and organization of farms. To improve anti-brucellosis measures mass immunization has been utilized recently together with general prophylactic and sanitary measures.

Several vaccines have been prepared from strains of low virulence for immunization of adult stock including cows in the first half of pregnancy. Since 1954 vaccination of animals of all ages has been carried out and by the end of 1957 about 15 million cattle had been immunized.

Russian workers have investigated the possibility of using live vaccines produced from brucella strains of low virulence including Strain 19 for immunizing sheep. Between 1954 and 1957 more than 10 million sheep were vaccinated with Strain 19 and this has considerably helped to decrease brucellosis in sheep.

BENEDEK, L., HOFFMAN, F. & NAGY, G. (1959). A brucella-allergén alkalmazása és reakciójának értékelése. [Evaluation and use of brucella allergen.]—*Mag. állator. Lapja* 14, 40-41. [In Hungarian. Summaries in English and Russian.] 3064

The value of a brucella allergen produced by acid hydrolysis was studied on 1,474 cows, injected intradermally with 0.2 ml. doses. At 48 hours a painful swelling exceeding 3 mm. or a non-painful swelling exceeding one third of the original thickness of the skin was regarded as positive. 387 cows reacted as positive with an average increase of 97% in the original thickness of the skin. The average increase in skin thickness was only 13% in negative cases.

The routine tests (agglutination, complement fixation and milk ring tests), carried out simultaneously, revealed only 310 positives among the 387 reactors, but indicated the presence of antibodies in 99 cases negative to "brucellin". The simultaneous use of serological and allergic tests is suggested for the routine diagnosis.—A. SEBESTENY.

SANDVIK, O. (1958). The significance of low titres in the sero-agglutination test for brucellosis in cattle.—*Bull. World Hlth Org.* 19, 1091-1093. 3065

In Norway *Br. abortus* infection was considered eradicated by 1951, neither *Br. meli-*

tensis, nor *Br. suis* has ever been detected, and no brucella vaccination has been carried out. In tests on 365 sera taken at random from 221 cows slaughtered after several lactations, 20 heifers, and 124 bulls (15-30 months old) against standard *Br. abortus* agglutination concentrate (Weybridge) in dilutions from 1:5 to 1:40 more than 70% showed partial or complete agglutination at 1:5, none at 1:80; no inhibition zones were seen. S. considers that for diagnosis sera with agglutination titres of 1:10, but with less than 50% agglutination at 1:20 should be regarded as negative; but those in which 50% agglutination occurs at 1:40 should be considered positive, and the intermediate ranges, suspect.—W. K. DUNSCOMBE.

BÜRKI, F. (1959). Kultureller Nachweis von Brucellen aus mikroskopisch (Köster) negativen Rindernachgeburten. I. Biochemie, Typisierung und Virulenzprüfung isolierter Stämme. [Cultivation of brucella from microscopically negative bovine placentas. I. Biochemistry, typing and virulence of isolated strains.]—*Schweiz. Arch. Tierheilk.* 101, 97-107. [Summaries in English, French and Italian.] 3066

Using Medium "W" [V.B. 25, 2306], B. isolated 22 strains of *Brucella abortus* and one of *Br. intermedia* from placental samples of 23 cattle which had negative microscopical and serological milk and blood tests. Most strains were of high to medium virulence and, although a proportion of the cows had been vaccinated, none of the strains resembled Strain 19.—E.G.

CEDRO, V. C. F., CACCHIONE, R. A., CISALE, H. O., MARTINEZ, E. S. & GIL, R. (1958). Apuntes sobre inmunología brucelar. Anticuerpos específicos en órganos de animales y en comparación con los anticuerpos séricos. [Specific antibodies in the organs of animals with brucellosis, compared with antibodies in serum.]—*Rev. Invest. Ganad.* No. 4 pp. 137-143. [Summaries in English and French.] 3067

Five g. pigs and 7 pigs (5 immunized) were inoculated with *Br. suis* and 3 g.pigs were inoculated with *Br. melitensis*. The principal organs were examined for agglutinins and c.f. antibodies at an unstated time after infection. The presence of apparently specific c.f. antibodies in heart muscle of pigs was of possible diagnostic value. No agglutinins were detected in organs of pigs.—R.M.

SULITZEANU, D. (1959). The fate of killed radioiodinated *Brucella abortus* injected into

mice.—*J. Immunol.* **82**, 304-312. [Author's summary modified.] **3068**

After intraperitoneal injection of radioiodinated, acetone-killed *Br. abortus*, the spleen and liver of mice collected a higher amount of radioactivity, and the mesenteric lymph nodes a lower amount, than the corresponding organs of immune mice. The distribution of the label was similar, whether the mice had been actively immunized with vaccine or passively immunized with serum. There was a good correlation between the immunizing dose and the radioactivity in the mesenteric lymph nodes.

Labelled bacteria sensitized with antibody behaved in the normal animal in a manner identical to that of non-sensitized bacteria in the immune animal.

A considerable proportion of the injected organisms was destroyed and the breakdown products excreted during the first 6 hours after inoculation.

KAMAL, A. M. (1959). *Studies on the cultivation of Brucella abortus in the developing chick embryo. I. Qualitative and quantitative studies on the S-form.*—*Zbl. Bakt. I. (Orig.)* **174**, 544-558. [In English. Summaries in French, German, Spanish and Russian. Author's summary modified.] **3069**

In 6-day-old embryos brucella infection was always induced by inoculating 4 organisms, and sometimes by only 2. The older the embryo, the longer the time between inoculation and death. All embryos inoculated with 2 millions after 11 days' incubation or earlier died within a week. *Brucella* was recovered from their organs and a titre of 1:300-1:600 was obtained in their serum.

Two growth curves for *Br. abortus*, one in the embryos proper and the other in the whole egg, were established.

The quantitative distribution of brucella through the developing egg was determined. The number of organisms in different parts of the egg were arranged in descending order as follows: blood, heart, spleen, liver, kidney, allantoic fluid, chorio-allantoic membrane, yolk sac, amnion, yolk, amniotic fluid.

JACOTOT, H. & VALLÉE, A. (1959). *Étude expérimentale d'une souche vaccinale de brucelle dérivée de la souche B 19 (souche Zdrodovsky). [Experimental study of the Russian brucella Strain BA, a vaccine strain derived from Br. abortus Strain 19.]—Ann. Inst. Pasteur* **96**, 638-641. [English summary modified.] **3070**

The BA strain isolated by Zdrodovsky

[*V.B.* **28**, 1704] and used for immunization of human beings is slightly less pathogenic than the Strain 19, from which it derives. The immunological capacity of the two strains seems to be identical. This brucella very easily produces R or RM mutants.

HOAG, W. G. & ALLEN, R. C. (1959). *Studies on an immunogenic agent against Brucella abortus. I. Titrations of a new soluble immunogenic agent against experimental infections in guinea pigs.*—*Amer. J. vet. Res.* **20**, 162-165. **3071**

A soluble type vaccine prepared by acid heat extraction of 13-day-old cultures of *Br. abortus* Strain 2308 and its metabolic products in Stuart's medium in doses of 0.25-1 ml. protected g.pigs against challenge 28 days later, but no protection occurred with similar type vaccine prepared from 2-day-old cultures. At the dose used no appreciable serum agglutinins developed.—A. ACKROYD.

PARNAS, J. & MIERZEJEWSKI, T. (1959). *Ergebnisse der weiteren biochemischen und immunobiologischen Untersuchungen der Brucella brucei. [Further biochemical and immunological studies on brucella.]—Zbl. Bakt. I. (Orig.)* **174**, 559-572. [Summaries in English, French, Spanish and Russian. English summary modified.] **3072**

New polysaccharide fractions and peptide-saccharide complexes were isolated from the 3 species of brucella. These fractions were evaluated in rabbits sensitized with brucella allergen, using Polish "brucelin PD" and 6 allergens from other countries.

In rabbits PD allergen was the most sensitive and most specific preparation. Other preparations were specific but produced poorer reactions than "brucelin PD".

DEDIÉ, K., LEHNERT, C. & JENDRUSCH, H. (1958). *Experimentelle Untersuchungen mit allergischen Intrakutantesten zur Diagnostik der Schweinebrucellose. [Intradermal allergic tests for diagnosis of brucellosis in pigs.]—Arch. exp. VetMed.* **12**, 193-201. **3073**

Recently more frequent *Br. suis* infections have been noted in pigs in Germany. The disease has a bacteraemic stage of 45-90 days and in chronic disease the agglutination test is of less value in pigs than in cattle because after about 4 months the titre can fall to 1:20 or 1:40 although the causal organism can be recovered and the c.f. and allergic tests are positive months later. Agglutination tests should be evaluated on a herd basis. The authors tested

2 preparations (a) a polysaccharide-polypeptide complex (PP-complex), and (b) an endotoxin, intradermally on the outside of the ear flap, and the side of the neck, using 0.2 ml. of each preparation. Control pigs given the same dosage of both (a) and (b) showed only slight redness after 6 hours which soon disappeared, but 8 pigs artificially infected 6 weeks previously showed as early as 2-3 hours after inoculation a definite reaction and locally a bluish-red focal lesion with a haemorrhagic central point, the skin being swollen round it for a diameter of 8-12 cm. the swelling being still prominent in the neck on the 2nd to 3rd day. In 21 pigs re-tested 4 weeks later, no c.f. antibodies were detected. Both allergens gave reliable reactions with no non-specific results in healthy animals. The skin on the side of the neck is the better site and the test is best read after 24 hours. The PP-complex allergen is recommended and the endotoxin can be used if serology is doubtful after 6 weeks. Further tests are being carried out on infected herds.—W. K. DUNSCOMBE.

GUERRA, M. & BENELLI, S. (1959). L'infezione brucellare della lepre. Indagine sierologica sulla presenza di eventuali focolai in Toscana e ricerche sperimentali. [Serological survey and experimental studies on brucellosis in hares.]—*Arch. Vet. Ital.* 10, 14-21. [Summaries in English, French and German.] 3074

Serum samples from 65 hares were negative to the slow agglutination and the c.f. tests. Experimental s/c inj. of *Br. melitensis* or *Br. abortus* did not cause disease and both these organisms retained their characteristics in serial passage in hares. It is considered that the hare may be susceptible to *Br. suis* and the introduction of hares from countries where this type of infection exists should be avoided.—T.E.G.R.

PROHÁSZKA, L. (1959). Versuche zur Herstellung von *Brucella suis*-Stämmen mit herabgesetzter Virulenz. [Experimental production of *Brucella suis* strains of low virulence.]—*Acta vet. Acad. Sci. hung.* 9, 67-72. [In German.] 3075

Repeated irradiation of virulent *Br. suis* yielded a strain that differed in nutrient requirement and was of low virulence for lab. animals. Pigs infected with it did not abort. It had good immunizing properties in mice.—M.G.G.

RENOUX, G. (1959). Transmission de la brucellose à l'homme. [Transmission of brucellosis to man.]—*Arch. Inst. Pasteur Tunis* 36, 77-121. 3076

This is an extremely wide-ranging review

of the whole subject by a world expert and as such is difficult to summarize. Points of general interest are:— (1) The idea of interspecificity between hosts and *Brucella* is outdated. (2) These organisms have been isolated from a very large number of both domestic and wild animals, including domestic pets, and also from biting arthropods especially *Ixodes* ticks which can harbour the organism for years and transmit it to their descendants. (3) The failure of the usual preventive measures in certain cases is probably due to the omission to test domestic pets, especially cats and dogs, or failure to destroy ticks or mosquitoes. (4) The disease can be transmitted to man by ingestion, contact, inhalation or inoculation, and emphasis is laid on the transmission of *Brucella* in the U.S.A. by "Certified Grade A" milk. (5) The organism can survive for up to 200 days in brine-pickled pork and 58 days in sausages and it can survive in nature for a long time, hence ingestion through drinking-water, raw vegetables, or fruit is possible. (6) It is a definite occupational disease, and infection can arise through Strain 19 vaccination, while blood transfusion can also be a source, and interhuman contact (particularly in the case of *Br. melitensis*) through the excretions. [372 references are listed.]

—W. K. DUNSCOMBE.

BUZNA, D. (1959). A lovak leptospirosis-fertőzőségének felismerése allergiás próbával. [Allergic test for the diagnosis of equine leptospirosis.]—*Mag. állator. Lapja* 14, 42-44. [In Hungarian. Summaries in English and Russian.] 3077

An antigen was produced by phenol treatment of cultures of *Leptospira pomona* for the allergic test for detection of leptospira infection in horses. The antigen injected i/d in 0.05-0.2 ml. doses into 2 g.pigs and 2 rabbits infected with *L. pomona* and into 2 dogs and 2 horses infected with *L. canicola* caused a marked swelling of the skin with no detectable antibody production.

293 horses received an i/d inj. of 0.1-0.2 ml. of the antigen. A swelling exceeding half of the original thickness of the skin in 24-120 hours was regarded as positive. With this test 86 horses were found to be reactors. Complement-fixation tests, carried out simultaneously, revealed only 32 positive cases among these reactors, but indicated antibodies against *L. pomona* in the serum of a further 14 animals. The simultaneous use of the allergic and c.f. tests is suggested as the best means of revealing the maximum number of infected animals.

—A. SEBESTENY.

SOVA, Z. (1959). Příspěvek k infekci koní leptospirou *sejro*. [*Leptospira sejro* infection in horses.]—*Vet. Čas.* **8**, 161-166. [In Czech. Summaries in English, French, German and Russian.] **3078**

Over a period of two years 4 of 15 horses developed enzootic hepatitis. Twelve had titres to 1:6,400 for *L. sejro*. From the symptoms, the blood picture, the behaviour of titres, and the fact that apparently healthy horses had yielded positive titres, it was concluded that *L. sejro* was not the primary cause of the disease.—E.G.

MITCHELL, D. (1959). Bovine leptospirosis in Canada.—*Allied Vet.* **30**, 54-58. **3079**

A 2-year study was made of leptospirosis in cattle in the Ottawa district. Most outbreaks occur from August to December. The commonest symptoms are an atypical mastitis and abortion. *L. pomona* was demonstrated in material from infected cattle, including milk samples, and serological reactions to *L. sejro*, *L. icterohaemorrhagiae* and *L. canicola* were observed.—M.G.G.

GUALANDI, G. (1959). Aborto da leptospira (*L. Pomonae*) in un allevamento di scrofe. [Porcine abortion due to *Leptospira pomona*.]—*Vet. ital.* **10**, 79-85. [Summaries in English, French and German.] **3080**

Of 180 sows 16 aborted and *L. pomona* was isolated in culture from foetal organs. Serum samples from 8 of the sows (the others were slaughtered soon after abortion) were positive for *L. pomona*.—T.E.G.R.

POKORNÝ, B., LEHKÝ, F., ŠEBEK, Z. & VOŠTA, J. (1959). Přírodní ohniska a rezervoáry leptospir v okolí Vodňan v roce 1957. [Natural foci and vectors of leptospirosis in Czechoslovakia.]—*Sborn. Čes. Akad. zemědělsk. Věd, vet. Med.* **4(32)**, 127-132. [In Czech. Summaries in German and Russian.] **3081**

Leptospiral antibodies were present in serum samples of 11 of 14 horses, 12 of 41 cattle, 13 of 32 goats, 3 of 9 dogs and 12 of 205 healthy human beings in the Vodňany district. Leptospira was demonstrated either serologically, histologically or by culture in 37 of 164 field voles (*Microtus arvalis*), 5 of 21 field mice (*M. agrestis*), and 5 of 10 wood mice (*Apodemus sylvaticus*).—E.G.

FUCHS, G. H. P. (1959). Beiträge zur Leptospirenzüchtung. I. Mitteilung. Untersuchungen über die Brauchbarkeit des Rinder-Augen-Glaskörpers und des Regenwassers als

Grundsubstrat für die Leptospirenkultur. [Cultivation of leptospires. I. Use of ox vitreous humour and rain water as substrate.]—*Zbl. Bakt. I. (Orig.)* **174**, 601-615. [Summaries in English, French, Spanish and Russian. English summary modified.] **3082**

Korthof medium with 33% filtrate of vitreous, or rain water with 50% filtrate of vitreous provide favourable conditions for the multiplication of leptospira. For maintenance of leptospira these media are inferior to the Korthof sheep serum medium. For serological use the rain water medium had some advantages.

Rain water was as good as the Korthof basic solution.

Korthof medium with 20% sheep serum yielded far better results than the same medium with 8 to 10% sheep serum.

The leptospira strains were arranged in groups according to their optimal nutritional requirements.

For the maintenance of stock cultures a rain water-sheep serum medium (33% serum) was recommended. For immunological reactions rain water medium (50% vitreous) was preferred.

WANNAN, J. S. (1958). Isolation of leptospires from contaminated cultures by plating.—*Aust. J. Sci.* **20**, 239. **3083**

W. confirmed the value of the technique described by Cox & Larson* for the cultivation of leptospires on a solid agar medium.

*Cox, C. D., and Larson, A. D. (1957). *J. Bact.* **73**, 587.

—K. G. JOHNSTON.

LARSON, A. D., TREICK, R. W., EDWARDS, C. L. & COX, C. D. (1959). Growth studies and plate counting of leptospires.—*J. Bact.* **77**, 361-366. [Authors' summary modified.] **3084**

Colonies of leptospires were obtained from the growth of single cells. Growth curves of three species were constructed, using plate counts as indices of growth, and generation times were calculated from these curves. Single viable cells were capable of initiating growth in tryptose phosphate serum broth. Streak plates could be used for isolation and plate counts for measuring leptospiraemia in infected animals. The significance of colony formation by leptospires is discussed.

GOLDBERG, H. S. & ARMSTRONG, J. C. (1959). Oxidase reaction with leptospiral colonies and its adaptation to antibiotic sensitivity testing.—*J. Bact.* **77**, 512-513. **3085**

Colonies of leptospira became deep pink 2

min. after the addition of *p*-aminodimethylaniline oxalate. The medium remained colourless. Within several hours the colonies became maroon, brown and black. At least 5 colony types of different morphology were seen. Disks steeped in antibiotic were placed in 48-hour-old cultures of *leptospira* and 24 hours later the reagent was added. Zones of inhibition were read within 10 min.—M.G.G.

ORLANS, E. S. & JONES, V. E. (1958). **Beta-propiolactone as a toxoiding agent.**—*Nature, Lond.* **182**, 1216-1217. **3086**

Inactivation of the beta-toxin of *Cl. welchii* Types B and C by the addition of 0.9-1% beta-propiolactone had considerable advantages over inactivation by formaldehyde. The antibody content of rabbits inoculated with toxoid inactivated with propiolactone was ten times that of rabbits inoculated with the formalized product.—R.M.

SIERENS, R. (1959). Over een geval van recidiverende tetanus. [**Recurrence of tetanus in a horse.**]—*Vlaams diergeneesk. Tijdschr.* **28**, 92-94. [In Flemish. Summary in French.] **3087**

Tetanus in a mare was successfully treated with antitoxin and penicillin. Two years later the mare again developed tetanus and again recovered following treatment, despite the development of inhalation pneumonia (treated with spiramycin and oxytetracycline).—R.M.

SORU, E., ISTRATI, M., POENARU, E. & STERNBERG, M. (1958). Étude chimique comparative de la toxine et de l'anatoxine tétanique. [**Comparative chemical study of tetanus toxin and toxoid.**]—*Arch. roum. Path. exp. Microbiol.* **17**, 283-288. [In French. Summaries in English, German and Russian.] **3088**

An account of a qualitative and quantitative study of the constituent amino-acids of tetanus toxin and toxoid. During detoxication with formaldehyde it was found that the toxoid differed from the toxin in that tyrosine was absent, there was a diminution of cysteine, histidine, arginine, aspartic acid, proline, methionine, phenylalanine, lysine and tryptophane, and a significant loss of aspartic acid as the terminal N-group.—D. S. PAPWORTH.

KRAVCHENKO, A. T. & REZEPOV, F. F. (1959). [**Obtaining botulism antitoxin from cattle.**]—*J. Microbiol., Moscow* **30**, No. 4 pp. 79-82. [In Russian.] **3089**

Antitoxin having an average titre of 3,000-5,000 "active units" per ml. was prepared

against the A, B and E toxins of *Cl. botulinum*. Hyperimmunization was performed during the normal fattening period of cattle and the serum was collected at the time of slaughter.—R.M.

I. APPLETON, G. S. & WHITE, P. G. (1959). **Field evaluation of *Clostridium botulinum* type C toxoids in mink.**—*Amer. J. vet. Res.* **20**, 166-169. **3090**

II. APPLETON, G. S. & WHITE, P. G. (1959). **Laboratory evaluation of a trivalent toxoid for botulism.**—*Ibid.* 170-172. **3091**

I. Under field conditions 1 ml. of five out of six *Cl. botulinum* Type C toxoids prepared from parent toxin produced in 2 different media and containing varying amounts of antigenic material stimulated good immunity responses in mink exposed 62-139 days later to more than 100 mink LD₅₀ of *Cl. botulinum* Type C toxin administered *per os*. A definite correlation between the immune responses in mice and mink to *Cl. botulinum* Type C toxoids was observed.

II. Satisfactory immunity against large doses of toxin of all 3 types of *Cl. botulinum* was observed in mice injected i/p 21 days before with a trivalent toxoid prepared from cultures of strains Hall (Type A), Okra (Type B) and South African (Type C) which had been diluted three to fivefold after 5-10 days of incubation and re-incubated with 0.5-0.6% commercial formalin for a further 8-12 days. In combination, the antigenicity of the Type B toxoid was enhanced.—A. ACKROYD.

WAGNER, M. & WOSTMANN, B. S. (1959). **Studies on monocontaminated chickens (*Clostridium perfringens* or *Streptococcus faecalis*) fed penicillin. Bacteriology, growth, serum gamma globulin, and antibodies.** In "Antibiotics annual 1958-1959" pp. 1003-1011. [New York: Medical Encyclopedia Inc.] **3092**

At nutritional level penicillin can eliminate *Cl. welchii* from the ileum of conventional chicks and those monocontaminated with this organism. In both cases, at 32 days, ileum streptococci were slightly decreased. In monocontaminated birds there was a tendency to antibiotic growth effect. Monocontamination with *Str. faecalis* raised the low gamma globulin level of germ-free chicks to that of conventional birds, with homologous agglutinin production. Penicillin had no effect here.—F. R. PAULSEN.

GHARIB, H. M. (1957). **Review of the literature on the role of tissue invading helminths in bacterial infections.**—*J. Egypt. vet. med. Ass.* October pp. 3-36. [In English.] **3093**

A discussion of literature on the role of hel-

minths in initiating bacterial infections, with special reference to *Onchocerca*, *Fasciola* and *Ascaris*, and to black disease and salmonellosis. [106 references.]—R.M.

DUNKLIN, E. W. & LESTER, W., JR. (1959).

Residual surface disinfection. II. The effect of orthophenylphenol treatment of the floor on bacterial contamination in a recovery room.—*J. infect. Dis.* **104**, 41-55. **3094**

Dilute solutions of an orthophenylphenol complex were applied daily for 11 days to the floor of a recovery room in a hospital and to the floor of the hall leading to the room. The bacterial contamination of the floor was reduced by 95%, of untreated surfaces by 60%, and of the air by 50%. The treatment is simple and economical, and free from odour and toxic hazard.—M.G.G.

GALE, G. O. & HALL, R. H. (1959). **The influence of submaximal antibiotic levels on the growth of chlortetracycline-resistant bacteria.** In "Antibiotics annual 1958-1959" pp. 1040-1046. [New York: Medical Encyclopedia Inc.] **3095**

Submaximal chlortetracycline levels inhibited growth of resistant staphylococci and psychrophilic pseudomonads, this being a phenotypic response, depending on environment. The genotypically resistant *Staphylococcus albus* 69R may show phenotypic adaptation to the drug. *Pseudomonas* spp. R42 and B235 were little affected by 10 µg./ml. at 28°C., but were inhibited at 4°C. The drug's inhibitory action against psychrophiles was enhanced by ethylenediamine tetraacetic acid.—F. R. PAULSEN.

BENACERRAF, B., THORBECKE, G. J. & JACOBY, D. (1959). **Effect of zymosan on endotoxin toxicity in mice.**—*Proc. Soc. exp. Biol., N.Y.* **100**, 796-799. [Authors' summary modified.] **3096**

Zymosan renders mice highly susceptible to the lethal effect of endotoxin at a time when activity of the reticular-endothelial system is greatly stimulated. This effect is similar to that following B.C.G. infection. Pretreatment with cortisone abolishes almost completely the increased susceptibility to endotoxin caused by zymosan or B.C.G. infection.

AFFRONTI, L. F. (1959). **Purified protein derivatives (PPD) and other antigens prepared from atypical acid-fast bacilli and *Nocardia asteroides*.**—*Amer. Rev. Tuberc.* **79**, 284-295. [Summaries in French and Spanish.] **3097**

Four strains of atypical acid-fast bacilli

and one strain of *Nocardia asteroides*, isolated from human infections, were grown on liquid medium. Purified protein derivatives and other antigens were prepared from them, and the chemical and biological properties of these preparations studied by sensitizing laboratory animals and testing their cross-reactions to skin tests, by precipitin tests, and by agar gel techniques.—R.M.

SEELE, W. (1959). **Das Vorkommen von Blastomyceten im allgemeinen Krankheitsbild bei der Schlachttier- und Fleischuntersuchung. [Blastomycetes in slaughtered animals and meat inspection.]**—*Berl. Münch. tierärztl. Wschr.* **72**, 24-29. [Summary in English.] **3098**

In the course of 8 months S. was able to isolate blastomycetes from 13 slaughtered animals (6 cattle, 5 sheep, 2 pigs and a horse). The sites from which they were obtained included the throat and the respiratory and digestive tracts (including the liver), and there was one case in a pig suggestive of lymphogenous generalization. In most cases the fungi were associated with concomitant bacterial infection. The fungi were not identified and their precise significance requires further study. They may be of special importance in the differential diagnosis of lesions in the lymph nodes of the alimentary and respiratory tract, and in the liver, in herds from which tuberculosis is being eradicated.—E. G. WHITE.

VON SANDERSLEBEN, J. (1959). **Mycotische Herdveränderung im Gehirn eines Hundes. [Mycotic lesions in the brain of a dog.]**—*Berl. Münch. tierärztl. Wschr.* **72**, 50-51. [Summary in English.] **3099**

A yearling bitch showed nervous symptoms over four days which were so severe as to necessitate destruction. The only lesion found P.M. was a gross swelling of the left cerebral hemisphere which showed in its caudal part an area of softening (the size of a small cherry) which had ruptured into the lateral ventricle. The lesion showed septate fungal hyphae in sections. Attempts to cultivate the fungus were unsuccessful.—E. G. WHITE.

MÅNSSON, I. (1959). **Den fungicida effekten av Pedyol studerad *in vitro*. [Fungicidal action of "Pedyol".]**—*Medlemsbl. Sverig. VetFörb.* **11**, 242-245. [In Swedish.] **3100**

The fungicidal activity of "Pedyol" a complex of cetylpyridine bromide and ortho-thymotic acid, was tested *in vitro* on 20 yeasts isolated from lesions of dermatitis, particularly otitis externa in dogs, using the diffusion method.

Complete inhibition of growth occurred even with very low concentrations of the compound and clinical tests are considered justified.

—F.E.W.

✓ JACKS, H. (1959). **A note on fungi isolated from stained wool.**—*N. Z. J. agric. Res.* **2**, 152. [Author's note modified.] **3101**

Small pieces of wool showing grey and yellow to reddish-brown stains were washed, plated on Czapek Dox and potato glucose agar, and incubated at 20°C.

A number of almost pure fungal colonies developed in the cultures. Intense pink-to-red, olive-green, yellow-to-brown, and grey-to-black pigments developed, these pigments darkening with age when viewed from the reverse side of cultures.

The causal organisms were tentatively identified as species of *Phoma*, *Chaetomium*, *Epicoecum*, *Macrosporium*.

As the stained wool was limited to the lower portions of the fleece, it is assumed that the soil fungi stained the wool when the sheep were lying down.

✓ YACOWITZ, H., WIND, S. & LEVIN, J. D. (1959). **The incidence of *Candida albicans* in poultry. Evaluation of nystatin and chlorhydroxyquinoline in the prevention of experimental moniliasis.** In "Antibiotics annual 1958-1959" pp. 994-997. [New York: Medical Encyclopedia Inc.] **3102**

Oral *C. albicans* infection in poultry was prevented or reduced by 71-125 mg./kg. of nystatin in the food. Chlorhydroxyquinolin was useless at 250-900mg./kg., and 2,500 mg. per kg., although preventing moniliasis, was toxic. Laying hens may show a high incidence of *C. albicans* in the crop.—F. R. PAULSEN.

✓ BLYTH, W. (1959). **Host/parasite relationships in experimental moniliasis: I. *Candida albicans*.**—*Mycopathologia* **10**, 269-282. [In English.] **3103**

Before testing chemotherapeutic agents on laboratory animals experimentally infected with fungal pathogens, it is essential to obtain an accurate assessment of degree of infection in control animals.

B. described an interpretation of experimental moniliasis of mice with particular reference to assessments of fungal morphology in relation to host defence reaction.—R.M.

FORNI, P. V. (1958). **Resistenza acquisita della *Candida albicans* ad alcuni antibiotici. [Acquired antibiotic-resistance of *Candida albicans*.]**—*G. Batt. Virol. Immun.* **51**, 149-

153. [Summaries in English, French and German.] **3104**

Nystatin- and colimycin-resistant strains were isolated from stock and freshly isolated strains of *C. albicans*; there was no cross resistance between these resistant strains.—T.E.G.R.

✓ LOKEN, K. I., THOMPSON, E. S., HOYT, H. H. & BALL, R. A. (1959). **Infection of the bovine udder with *Candida tropicalis*.**—*J. Amer. vet. med. Ass.* **134**, 401-403. [Authors' summary modified.] **3105**

Mastitis caused by *C. tropicalis* developed in 45 quarters of 15 cows within 5-8 days after all 60 quarters were treated with an antibiotic.

Mastitis caused by this organism seems to be self-limiting in most cases. The organism persisted in the udder for at least 4 months.

The necessity for extreme care in administering antibiotics by udder infusion is emphasized.

—IVASHKOV, I. S. (1959). **[Treatment of ringworm with chlorophos.]**—*Veterinariya, Moscow* **36**, No. 1 p. 59. [In Russian.] **3106**

Success was claimed for the treatment of ringworm in 43 calves by rubbing into the lesions (for 15-30 min.) a 5, 10 or 15% soln. of chlorophos (Dipterex). Apparently there were no untreated controls.—R.M.

—LANGHAM, R. F., SCHIRMER, R. G. & NEWMAN, J. P. (1959). **Nocardiosis in the dog and cat.**—*Mich. St. Univ. Vet.* **19**, 102-107 & 119. [Authors' summary modified.] **3107**

Nocardia asteroides was isolated from four dogs and a cat. Another case was diagnosed by histological techniques.

Grossly, the lesions consisted of reddish masses of tissue covering the pleura and thoracic organs. In the skin and subcutaneous tissues, the lesions developed as abscesses.

Microscopically, the reddish masses consisted of very vascular granulation tissue containing nodules with *N. asteroides* colonies. The subcutaneous lesions consisted of areas of suppuration surrounded by lymphocytes, macrophages, and granulation tissue.

Subcutaneous lesions can be treated successfully.

—FROST, A. J. (1959). **A review of canine and feline nocardiosis with the report of a case.**—*Aust. vet. J.* **35**, 22-25. [Author's summary modified.] **3108**

This review demonstrates: the lack of knowledge of the organism concerned; the many clinical manifestations; the difficulty of early diagnosis; the apparent hopelessness of treating

other than early cases; and the probability of frequent clinical confusion with post-distemper infections.

F. reported a fatal case in a dog.

BOYER, C. I., JR., BRUNER, D. W. & BROWN, J. A. (1958). *A Streptobacillus, the cause of tendon-sheath infection in turkeys.*—*Avian Diseases* 2, 418-427. 3109

A streptobacillus was isolated from exudate from tendovaginitis of the hock which caused lameness in about a tenth of 100 male birds. The condition was reproduced in poult aged 3-11 weeks by inoculation of exudate or cultures of the organism i/v or s/c into the foot-pad. Inoculation of chicks failed to produce symptoms or lesions, and this excluded the possibility of infection with the agent of avian infectious synovitis. Infection through rat bites could not be ruled out.—R.M.

ZINCHENKO, A. V. (1959). [Disease of pigs by toxic fungi.]—*Veterinariya, Moscow* 36, No. 3 p. 37. [In Russian.] 3110

During the winter of 1956/57 outbreaks of profuse diarrhoea affected large numbers of store pigs in 4 of the 26 oblasts (regions) of the Ukraine. Mortality was sometimes high: on one farm only 25 of 600 pigs recovered. The disease lasted for 7-8 days and was accompanied by rapid loss of body wt. Bacteriological examinations of dead pigs were negative. Two fungi which were consistently found in foodstuffs from affected farms were *Aspergillus flavus* and *Scofulariopsis brevicaulis*.—R.M.

BAKOS, K., BANE, A. & THAL, E. (1959). Ueber das Vorkommen von pleuropneumoniae-ähnlichen Organismen (PPLO) im Genitaltraktus bei Rindern. [Incidence of pleuropneumonia-like organisms (PPLO) in the genital tract of cattle.]—*Proc. XVIth Int. vet. Congr., Madrid* 2, 543-545. [In German.] 3111

In Sweden, PPLO were demonstrated in the preputial washings and semen of 10 out of 20 fertile bulls and 19 out of 25 bulls with low fertility, in the vestibulum and vagina of 2 of 11 maiden heifers with vestibulovaginitis and 8 of 34 sterile cows and heifers, but not in 65 normal maiden heifers and 29 fertile cows. Six maiden heifers were infected with 9 strains of PPLO isolated from the bulls. No significant changes developed in their genital organs. In 3 PPLO were demonstrated regularly in the vagina and vestibulum for up to 33 days, and in one also in the apparently normal uterus P.M. 27 days after infection. All of 7 heifers mated

to bulls infected with PPLO developed acute vestibulovaginitis but this was considered due to other factors. PPLO were re-isolated from 6. It is concluded that these PPLO strains are not the primary cause of genital diseases in cattle.

—M.G.G.

HARTWIGK, H. (1959). Die chronische Atemkrankheit des Huhnes. [Chronic respiratory disease of fowls.]—*Mh. Tierheilk.* 11, 20-30. 3112

Symptoms and P.M. findings of C.R.D. are described in fowls of different ages. Difficulty of differentiating between pathogenic and non-pathogenic P.P.L.O. is stressed. According to Jungherr, this differentiation is possible by means of phenol red broth, but was found not reliable by the author. Reliable methods seem to be lacking, though Edward's agar plate was found useful if employed with much care. Cultivation, appearance of colony and table of fermentation tests of P.P.L.O. are appended. P.P.L.O. are considered more similar to bacteria than to viruses because of growth on cell-free media. A haemagglutination test, using a dye reagent similar to that used in pullorum disease and obtained from the U.S.A., was reliable for detecting infected birds, but the position regarding carriers is uncertain.

Aureomycin and streptomycin are recommended, in conjunction with improved husbandry.—IRENE M. DIXON.

ROBINSON, L. B., BROWN, T. M. & WICHELHAUSEN, R. H. (1959). Studies on the effect of erythromycin and antimalarial compounds on pleuropneumonia-like organisms.—*Antibiot. & Chemother.* 9, [No. 2.] 111-114. [Summary in Spanish p. 127. Authors' summary modified.] 3113

Thirteen "human" strains of PPLO were resistant to erythromycin, whereas one "animal" strain (L4) was highly sensitive to this antibiotic *in vitro*.

Of the three antimalarial compounds tested, only one (mepacrine) was effective in low concentrations against PPLO. High concentrations of quinine were necessary to achieve inhibition, and chloroquine was only slightly more effective.

CHALQUEST, R. R. (1959). Studies on the survival of pleuropneumonia-like organisms (PPLO) in experimentally infected hatching eggs that were dipped in antibiotic solutions.—*Thesis, Cornell* pp. 49. 3114

Warm hatching eggs were dipped into cold

antibiotic solutions in an attempt to produce sufficient absorption to prevent infection of the chick or poult with the agent of infectious sinusitis. About 15,000 hens' eggs and 2,000 turkey eggs were used.

Eggs were pre-incubated at 37°C. and dipped in an oxytetracycline solution (100, 500, or 1,000 p.p.m.) at 5°C. for 30 min. Yolk and albumen assays indicated that the antibiotics

entered during the dipping process, and treatment did not affect hatchability.

To test the survival of PPLO after treatment fresh hatching eggs were inoculated with 0.1 ml. of a dilution of a 48-hour broth culture of PPLO. Significantly fewer isolations were obtained from the group that had been dipped in erythromycin solution than from the undipped eggs.—H. L. GILMAN.

See also absts. 3282 (biological standards); 3335 (book on fungal diseases); 3336 (book on staphylococci).

DISEASES CAUSED BY PROTOZOAN PARASITES

KAZANSKY, I. I. (1958). Les méthodes de lutte contre la "dourine" et le "suauru" des animaux, adoptées en U.R.S.S. [Control of dourine and surra in Russia.].—*Bull. Off. int. Epiz.* 49 bis, Nos. 11-12 pp. 142-156. [In English. pp. 157-170.] 3115

The geographical incidence, causal agents, symptomatology, epidemiology and treatment of dourine and surra are discussed. Control is based on routine clinical examination, blood and serological tests, treatment of known infected animals and castration of infected, non-pedigree stallions. For the control of surra, animals are tested in autumn and winter and grouped as infected, suspect or non-infected. Infected animals are treated before spring. In the spring and summer all susceptible animals are removed to a tabanid-free area; healthy ones are treated with suramin and put on clean pastures. Treatment may be repeated after 1-15 months. In the case of dourine, all the stallions, mares served or inseminated during the previous year and foals of infected or suspected mares are tested once a month during winter. They are then divided into infected, suspect or healthy in-contacts. Infected and suspect stallions are held back for 1 year and treated. Mares are bred from 5 days after treatment with suramin—there is no danger of infection to sires or offspring. In-contact mares are artificially inseminated or naturally served by a treated suspect stallion. Healthy mares are artificially inseminated or served by healthy stallions which have been previously injected with suramin. Infected stallions are used for service 1 year after treatment, provided the routine diagnostic tests are negative.—T.E.G.R.

in East and West Africa. These were mainly chemotherapy and chemoprophylaxis, particularly in relation to cattle trypanosomiasis.

The year saw the first meeting of the specialist committees set up to deal with three important aspects of trypanosomiasis (human, animal and insect) in East Africa. A fundamental study in progress is related to the degree of which animals are exposed to infection—the trypanosome challenge.

The culture of trypanosomes in artificial media has been studied for the diagnosis of sparse infections. Although this is successful for the detection of scanty trypanosomes in blood, no attempt to culture trypanosomes from the cerebrospinal fluid has been successful even when the parasites are numerous.

Previous attempts to isolate field strains of *T. congolense* and transmit them by tsetse fly have failed, but now a *congolense*-like trypanosome has been isolated which acts quite differently, producing infections which are acute in dogs, goats and rats and semi-acute in cattle and sheep. This trypanosome appeared to be longer than the normal *T. congolense*.

—D. S. RABAGLIATI.

GOBLE, F. C. & BOYD, J. L. (1959). Action of certain tetrapyrrole derivatives in experimental *Trypanosoma congolense* infections. — *Proc. Soc. exp. Biol., N.Y.* 100, 745-750. [Authors' summary modified.] 3117

Tetrapyrrole derivatives of both plant and animal origin were tested on *T. congolense* infections in mice. Of these, chlorophyllins, containing either magnesium or copper, and haematoporphyrin delayed deaths from trypanosomiasis and with prolonged administration cure could be effected. The non-metallic phaeophorbide relatives of chlorophyllin were ineffective as were deuteroporphyrin, mesoporphyrin, phylloporphyrin, pyrroporphyrin, rhodoporphyrin and uroporphyrin, as well as certain bile pigments. The antitrypanosomal effect of chloro-

GT. BRITAIN. (1958). Tsetse fly and Trypanosomiasis Committee Report for 1957-1958. pp. 16. London: Colonial Office. 3116

The topics discussed were as diverse as ever, but particularly the research programme of the Regional Trypanosome Research Organisation

phyllin and haematoporphyrin could be reversed, either completely or partially, by haemin, but not by protoporphyrin. These findings would support the hypothesis that the mechanism of action of these tetrapyrrole derivatives in suppressing trypanosome infection involves competitive inhibition of a growth factor essential for the parasite (apparently haemin, rather than protoporphyrin). Other species of haemoflagellates and certain other parasites were uninfluenced by compounds active in *T. congolense* infections.

NOBLE, N. M. (1958). **Antrycide suramin complex as a prophylactic against trypanosomiasis in pigs. A field trial in Sierra Leone.**—*Bull. epiz. Dis. Afr.* **6**, 379-384. [Summary in French.] **3118**

In Sierra Leone, trypanosomiasis, caused mainly by *T. simiae* and to a less extent by *T. congolense*, is most prevalent during the rainy period.

Antrycide pro-salt used prophylactically gave disappointing results. In a small field trial in a piggery in an uncleared bush area, antrycide-suramin complex was used in 20 healthy pigs not previously given a trypanocidal drug. Ten were given 40 mg./kg. and five 20 mg./kg. and five were controls. Six months later, with 3 additional controls to replace 3 which had died (one as a result of the journey and five of the test pigs for the same reason) the 10 surviving test pigs were given a second dose (at 20 mg. per kg.) and 5 were controls. Of the 10 test pigs 2 developed chronic trypanosomiasis (one *T. congolense*, one *T. simiae*) and were cured with the second inj. Of the 7 controls 4 developed the disease (2 fatal *T. simiae* during the first six months, 1 acute *T. simiae*, 1 chronic *T. congolense* (?)).

N. considers that injections should be given every 2-3 months, since rapid growth invalidates the estimated dose rate necessary for protection. The injection causes a transitory small, hard, painful swelling locally.

—BRENDA M. WILSON.

IWATA, A., TAKAMURA, M., KITA, E., INUI, S., KAWASHIMA, H. & NAGAI, H. (1959). **[On the trypanosome isolated from severely anaemic cows. A case of mixed infection with a small piroplasm.]**—*J. Jap. vet. med. Ass.* **12**, 22-28. [In Japanese. Abst. from English summary.] **3119**

Anaemia in Jersey cows imported into Japan was associated with the presence in peripheral blood of a trypanosome resembling *T. theileri* and an unidentified piroplasm.—R.M.

KOVALEV, A. A. & ZHADOVETS, K. I. (1959). **[Aminoacriquine treatment of trichomoniasis in bulls.]**—*Veterinariya, Moscow* **36**, No. 1 pp. 33-36. [In Russian.] **3120**

The action of aminoacriquine on *Tr. foetus* was superior *in vitro* to that of novoplasmin or suramin: a conc. of 1:20,000 inhibited growth of the organism. Treatment of infected bulls commenced with introduction of 50-100 ml. of 1% soln. of aminoacriquine into the urethra and washing the prepuce with a 3% soln. under local anaesthesia. On the second day the drug was inj. i/v (0.0035 g./kg. body wt.) and again on the fifth and sixth days. It was claimed that trichomonads were eliminated from 74% of bulls by a single course of treatment, and from an additional 7.4% by a second course. [Aminoacriquine has been used previously in bovine theileriosis (*V.B.* **27**, 3565) and as an anthelmintic (*V.B.* **28**, 1813).]—R.M.

SENGER, C. M., HAMMOND, D. M., THORNE, J. L., JOHNSON, A. E. & WELLS, G. M. (1959). **Resistance of calves to reinfection with *Eimeria bovis*.**—*J. Prot.* **6**, 51-58. [Authors' summary modified.] **3121**

An immunity to re-infection with *E. bovis* was demonstrated in calves. It develops rapidly, as indicated by resistance to a challenge given 14 days after the immunizing inoculation. In 3 groups of young calves moderate immunity was still present 2 to 3 months after inoculation; in one group of yearlings there was apparently strong immunity about 7 months after the last inoculation. An immunizing inoculum of 10,000 oocysts did not produce as much immunity as 50,000. There appeared to be little difference in the immunity produced by a single inoculation of 50,000 as compared with 100,000 oocysts, but inoculation with 100,000 resulted in substantially longer and more severe illness than 50,000. There was no appreciable difference in clinical symptoms or immunity between calves given a single immunizing inoculum and those given the same number of oocysts in 5 equal inocula on successive days. Treatment with sulphadimidine and sulphamerazine 13 to 15 days after inoculation alleviated the clinical symptoms of coccidiosis without interfering appreciably with the development of immunity. In 7 calves no beneficial effect was noted from 1 or 2 transfusions of 500 ml. of plasma and leucocytes from immune calves between 1 and 12 days after challenge inoculation.

MITTELHOLZER, L. (1959). **Neue Behandlung der Geflügelkokzidiose. [Treatment of coccidiosis in poultry.]**—*Schweiz. Arch. Tierheilk.*

101, 32-36. [Summaries in English, French and Italian.] **3122**

Coccidiosis in cattle, rabbits and pheasants was cured with "Formo-Cibazol" (a condensation product of sulphathiazole and formaldehyde). The drug is non-toxic and eliminated in the faeces. 100-200 mg. per kg. body wt. per day for 6 days was a successful prophylactic, but 250 mg. was necessary for treatment. Whether a smaller prophylactic dose might suffice was not ascertained.—IRENE M. DIXON.

McLOUGHLIN, D. K. & CHESTER, D. K. (1959).

The comparative efficacy of six anticoccidial compounds.—*Poult. Sci.* **38**, 353-355. [Abst. from authors' summary.] **3123**

In all the treated groups there was less mortality, less evidence of severe haemorrhage, less caecal damage, and better weight gains than in the untreated groups.

Glycarbylamide and nicarbazin appeared to be more efficacious than nitrofurazone, Bifuran, sulphaquinoxaline, and Trithiadol.

ARLINE, R. E. & MAMELLI, J. A. (1958).

Laboratory studies of anaplasmosis in cattle treated with oxytetracycline.—*J. Amer. vet. med. Ass.* **133**, 517-519. **3124**

Blood studies of 127 cattle revealed positive signs of anaplasmosis.

Erythrocyte studies were made, blood smears being examined to note morphology of parasitized cells. Differential and total leucocyte counts were made in most cases; plasma was examined in all cases for icterus and haemoglobinaemia.

Not all cases showed the characteristic blood changes; also increased erythrocyte destruction may occur, without detectable icterus and haemoglobinaemia. For this reason 47 cattle with low erythrocyte volumes and low haemoglobin levels were treated with oxytetracycline. Doses of from 1 to 3 mg. per lb. body wt. were given i/v, i/m or s/c (it is doubtful if the method of administration affects response).

Two animals died. But 72 hours after treatment 62% of the survivors showed increased erythrocyte volume and 42% increased haemoglobin level, and the abortion rate was reduced from 25% to 0%. There is no direct relationship between strength of dose and magnitude of response.—BRENDA M. WILSON.

LAINSON, R. (1958). Some observations on the life-cycle of *Atoxoplasma*, with particular reference to the parasite's schizogony and its transmission by the mite *Dermanyssus gallinae*.—*Nature, Lond.* **182**, 1250-1251. **3125**

Detailed study of the life-history of *Atoxoplasma* showed that the relationship to *Toxoplasma* is closer than their morphology and habitat would suggest.

A number of house sparrows infected with *Atoxoplasma* were studied. The young became infected as fledglings and many died; P.M. the liver was enlarged, pale and marbled in appearance and the spleen had doubled its volume. Smears of these organs and bone marrow revealed all stages of schizogony of the parasite; 20-30 merozoites being produced in cells of the lymphoid-macrophage system. Merozoites were smaller, and each had a smaller nucleus than the adult parasite.

When parasites were transferred to canaries, many of the birds died. Inoculation of mice and hamsters with the parasite produced no effect.

A canary died after being fed red mites (*D. gallinae*) from atoxoplasma-infected sparrows. L. suggests that the mite is responsible for transmission of protozoan parasites in nature since it is closely associated with wild birds.

—BRENDA M. WILSON.

DE CARNERI, I. (1958). The frequency of balantidiasis in Milan pigs.—*Trans. R. Soc. trop. Med. Hyg.* **52**, 475-476. **3126**

The author considers that the variations in incidence of balantidiasis in pigs, depend more on the test method used than on the geographical situation. He suggests the following method if the animal is weakly infected, as direct examination would give a negative result.

Within two hours of slaughter 50-100 mg. of faeces from the caecum is placed in a gauze bag, suspended by string midway in a 1-litre conical beaker filled with M/15 phosphate buffer pH 7.2 at 37°C. The motile balantidia move out of the gauze and collect on the bottom of the beaker. After 30-60 min. a small amount of sediment is pipetted from the bottom of the beaker and examined microscopically. If negative results are obtained further examination is made 3-6 hours later.

Using this method the incidence of infection in 80 pigs examined in Milan in 1958 was 98%.

—BRENDA M. WILSON.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

MOHIYUDDIN, S. (1958). Heavy mortality among suckling calves due to foot and mouth disease characterised by degeneration of cardiac muscle and its control by using anti-serum from convalescent animals.—*Indian vet. J.* **35**, 625-627. **3127**

Seventeen calves died from F. & M. disease within 5 days on one farm. Administration of serum from convalescent cattle prevented further losses.—R.M.

BROOKSBY, J. B. (1959). The epizootiological picture in foot-and-mouth disease. — *Proc. XVIth Int. vet. Congr., Madrid 1*, 233-245. [Summaries in French, German and Spanish. Author's summary modified.] **3128**

B. discussed the world distribution of F. & M. disease and the chief ways by which the virus was spread. The quiescent phase between epidemics was viewed as an uneasy equilibrium between the virus and the susceptible population. Disturbance of this equilibrium by change in either the virus or the immune state of the host could lead to an epidemic.

The seven types and the numerous sub-types of the virus were of obvious epidemiological importance. The World Reference Laboratory recently established by F.A.O. was intended to deal specially with the world distribution of types. Classification of sub-types was expected to yield new information on the origin of epidemics and the efficacy of vaccination.

SCHANG, P. J. (1959). Aislamiento, transmisores y portadores en fiebre aftosa. [Isolation, transmission and carriers of foot and mouth disease.] — *Proc. XVIth Int. vet. Congr., Madrid 2*, 483-485. [In Spanish. Summaries in English, French, German and Spanish pp. 437-439.] **3129**

Laboratories working on F. & M. disease in Argentina and Uruguay keep their experimental cattle in paddocks separated by fenced isolation strips 8-10 metres wide. S. himself has worked for 23 years with the virus, using 27,000 cattle, and has never experienced cross infection with different types of virus, or contamination of susceptible cattle. He concludes that in Argentina the disease is transmitted by direct contact and that wild animals, birds, insects, and recovered cattle do not carry the disease.

—M.G.G.

CAMPION, R. L. & GATTO, F. B. (1959). Persistencia de la infecciosidad del virus aftoso. [Persistence of the infectivity of foot and

mouth disease virus.] — *Proc. XVIth Int. vet. Congr., Madrid 2*, 433-435. [In Spanish.] **3130**

Twenty tests were made of the persistence of F. & M. disease virus, 12 on pasture plots and 8 in corrals. The pasture plots were each of 12,000-15,000 sq. metres, and of the corrals 7 were 10.5 sq. m., with a cement floor and no shade, and the eighth was 68 sq. m., with a little shade. The lapse of time between removal of cattle in the acute stage of the disease and entry of susceptible cattle varied between 0 and 95 hours on pasture and 46 and 125 hours in the corrals. On pasture the susceptible cattle became infected only in 2 tests, both with a lapse of 48 hours. In both tests the infecting group of cattle was large—42 and 43 animals. In the corrals cattle became infected in 2 tests, with a lapse of 46 and 49 hours. It is concluded that pastures and corrals that have held cattle in the acute stage of F. & M. disease remain infective for not more than about 48 hours.—M.G.G.

PETERMANN, H. G. (1959). Eine Schnelladaptationsmethode des Maul- und Klauenseuchevirus an das Kulturverfahren nach Frenkel. [Rapid method for adaptation of foot and mouth disease virus to tissue cultures.] — *Zbl. Bakt. I. (Orig.)* **175**, 63-66. [Summaries in English, French, Spanish and Russian. English summary modified.] **3131**

After serial passages on secondary pig-kidney-cell cultures, F. & M. disease virus multiplies to high cytopathogenic titres. This virus may be used as seeding virus for the culture procedure of Frenkel. The adaptation of the virus, which is cytopathogenic for pig kidney cells, to culture on surviving bovine tongue epithelium is accomplished without difficulty. Vaccination experiments in cattle proved that the immunizing qualities of the adapted virus remained unchanged and equalled those of the virus adapted by the classical method.

BALDELLI, B. & TORLONE, V. (1959). Titolazione ed identificazione del virus aftoso con il metodo delle placche secondo Dulbecco su colture di cellule renali di bovino "in vitro". [Titration and typing of the foot and mouth disease virus by the plaque technique on bovine kidney cell culture.] — *Arch. Vet. Ital.* **10**, 125-133. [Summaries in English, French, German and Spanish.] **3132**

The method proved convenient and practical for titrating and typing F. & M. disease virus.—T.E.G.R.

RIVENSON, S. (1958). Valor antigénico comparativo de una cepa bovina de virus aftoso tipo "C" y la misma cultivada por la técnica de Frenkel. [**Antigenic properties of a strain of type C foot and mouth disease virus before and after cultivation by the method of Frenkel.**—*Rev. invest. Ganad.* No. 4 pp. 125-131. **3133**

Antigenic properties of virus passaged 96 times in tissue culture did not differ from the same strain passaged in cattle.—R.M.

GARCÍA PIRAZZI, A. J. (1959). Diagnostico diferencial entre la estomatitis vesicular y la fiebre aftosa. [**Differential diagnosis of vesicular stomatitis and foot and mouth disease.**—*Gac. vet., B. Aires* **21**, No. 117. pp. 32-37. [Summary in English.] **3134**

Laboratory procedures were described. A strain of vesicular stomatitis virus isolated in Venezuela closely resembled the New Jersey strain.—R.M.

TORLONE, V. (1958). Coltura del virus della pseudo-rabbia su cellule renali di cane "*in vitro*". [**Culture of Aujeszky's disease virus on dog kidney cells.**—*Arch. Vet. Ital.* **9**, 501-512. [Summaries in English, French and German.] **3135**

The virus was cultured on dog kidney cells *in vitro* and had a clear early cytopathogenic effect which was neutralized by immune serum. High virus titres were obtained and there was no loss of pathogenicity. This facilitates the preparation of large quantities of antigen for diagnostic and immunological purposes. The susceptibility of kidney cells to the virus is about the same as that of mice injected intracranially and this provides a reliable means of *in vitro* titration. Degenerative changes in the cells were similar to those reported in the case of the herpes viruses. Intranuclear inclusions were not observed. Growth rate on cells in relation to the rate of liberation of virus in the culture liquid was also studied.—T.E.G.R.

DEMPHER, J., TOKUMARU, T. & ZABARA, J. (1959). A possible role of an inhibitory system in virus-infected sympathetic ganglia of the rat.—*J. Physiol.* **146**, 428-437. [Authors' summary modified.] **3136**

It is suggested that spontaneous impulses may arise in rat superior cervical ganglia following infection with Aujeszky's disease virus because the virus infection has interfered with the normal action of an inhibitory system originating in the c.n.s. and is exerting its actions upon the presynaptic nerve endings. It is also

suggested that adrenaline, noradrenaline and gamma aminobutyric acid are possible substances released by this system.

BAUER, A. G. (1959). Considerações sobre a raiva bovina e sua transmissão por morcegos no Rio Grande do Sul. [**Bat-transmitted rabies in cattle in Rio Grande do Sul, Brazil.**—*Arch. Inst. Pesq. vet. Finamor* 1956/57. **2**, 20-22. [In Portuguese. Summary in English.] **3137**

An account is given of bat-transmitted rabies in cattle in Brazil. Negri bodies were not demonstrable in the brains of bats examined. Inoculation of young mice with bat brain tissue gave positive results with 4 of 32 brains. [In the bibliography one of the references from the *Veterinary Bulletin* is incorrect. "Isolamento de virus rabico de morcegos insectivoros na Inglaterra, Resuma do Vet. Bull **14** (pg) 801) dez 1956." should read: "Isolation of rabies virus from insectivorous bats in Yugoslavia.—*Bull. World Hlth Org.* **14**, 801-804. Abst. in *Vet. Bull., Weybridge* **26**, 3773 (1956)."—Ed.]

—T.E.G.R.

BAUER, A. G. (1959). A aplicação de uma nova vacina na profilaxia da raiva bovina, no Rio Grande do Sul. [**A new vaccine for the control of rabies in cattle.**—*Arch. Inst. Pesq. vet. Finamor* 1956/57. **2**, 77-78. [In Portuguese. Summary in English.] **3138**

It is reported that an adsorbed rabies vaccine prepared (at the Finamor Institute) from brain tissue of horses infected with fixed virus gave good protection.—T.E.G.R.

HUYGELEN, C. & MORTELMANS, J. (1958). L'emploi du lapin dans les tests de contrôle des vaccins antirabiques. [**Use of rabbits for testing rabies vaccines.**—*Ann. Soc. belge Méd. trop.* **38**, 1037-1044. [In French. Summaries in English, Flemish, German and Spanish. English summary modified.] **3139**

Nearly all rabbits receiving a daily injection of phenolized rabies vaccine prepared from sheep brain show inappetence and loss of weight; some of them die rather suddenly. The toxicity of the brain substance proved to be the cause of this phenomenon. The symptoms are entirely different from the paralysis observed sometimes in man and dogs after anti-rabies vaccination.

Consequently the use of rabbits in control tests of rabies vaccines should be avoided, because at the moment of challenge with the test virus, they are in very poor general condition.

NIKOLITSCH, M. (1959). Der Weg des neurotrophen Virus, dargestellt in Modellversuchen an Tollwut und lymphozytärer Choriomeningitis. [The route of neurotropic virus, demonstrated by experiments with rabies and lymphocytic choriomeningitis.] — *Zbl. Bakt. I. (Orig.)* **175**, 1-10. [Summaries in English, French, Spanish and Russian, English summary modified.] **3140**

The following conclusions were drawn from experiments with rabies and LCM viruses. With the exception of viruses of a quite pronounced neurotropism, viruses which are neurotropic are transported by the blood stream from the site of entry to the c.n.s. Only a previous alteration of the blood-brain barrier enables the virus to enter the c.n.s. from the periphery. This alteration can result from viraemia. Therefore viraemia is a necessary condition for the invasion of the c.n.s. by virus.

GOODPASTURE, E. W. (1959). Cytoplasmic inclusions resembling Guarnieri bodies, and other phenomena induced by mutants of the virus of fowlpox.—*Amer. J. Path.* **35**, 213-223. [Author's summary modified.] **3141**

An experimentally-induced mutant strain of fowl pox virus caused lesions differing considerably from those caused by a classical field strain.

The strain is capable of infecting immature epithelium of renal tubules by direct intrarenal inoculation or by i/v injection. The infection resulting from intrarenal injection can cause a remarkable local adenomatous hyperplasia which superficially simulates neoplasia.

In infected epithelial cells basophilic cytoplasmic inclusions resembling Guarnieri bodies of smallpox and vaccinia appear. These are described, and a hypothesis concerning their nature is advanced.

DIEFENTHAL, W. & HABERMEHL, K.-O. (1959). Verhalten und Nachweis von Ektromelievirus in der Gewebekultur. [Behaviour and demonstration of ectromelia virus in tissue culture.] — *Zbl. Bakt. I. (Orig.)* **175**, 67-79. [Summaries in English, French, Spanish and Russian, English summary modified.] **3142**

Ectromelia virus reproduced well in monolayer of embryonic mouse fibroblasts and the yield of virus was considerable.

Determination of I.D.₅₀ in tube cultures or by "plaque"-forming units in monolayer tissue cultures was suitable for titration of the virus.

Virus production was accompanied by characteristic cytopathogenic changes.

KAPLAN, M. M. & PAYNE, A. M.-M. (1959). Serological survey in animals for type A influenza in relation to the 1957 pandemic.—*Bull. World Hlth Org.* **20**, 465-488. [Summary in French. English summary modified.] **3143**

In 1957 the World Health Organization arranged a survey of horse and pig sera in a number of countries to study the role of animals in the epidemiology of influenza. The veterinary services were requested to obtain blood specimens if possible both before and after the human pandemic of Asian influenza. This paper reports the results of haemagglutination-inhibition and complement-fixation tests on these sera. The results indicated that the Asian (A2) strain can cause natural inapparent infection in horses and pigs. Equine influenza caused by the A-equi strain is also present in many countries from which it had not been previously reported, and infection in pigs with the A-swine strain, long known in the U.S.A. has now been recorded in at least two European countries.

STEWART, R. B. & MORGAN, H. R. (1959). Studies on cytotropism in animal viruses. I. Growth of influenza virus in lung cells derived from hatched chicks and chick embryos. — *J. Immunol.* **82**, 264-273. [Authors' summary modified.] **3144**

Growth of influenza Type A (strain PR8) was obtained in tissue cultures of liver and lung cells from chick embryos varying from 11-19 days old, as well as in cultures of lung cells from chick embryos that were within a few hours of hatching. Although virus multiplication was found in tissue cultures of lung cells from hatched chicks, the levels reached were not as high as in similar cultures of embryo lung. Virus growth occurred at both 37° and 41°C. in embryo lung but only at 37° in cultures of lung cells of hatched chicks. This was probably due to the dissimilarity in cell types predominating in the cultures—epithelial cells in the embryo lung cultures and fibroblast cells in the cultures of hatched chick lung cells.

STAMM, D. D. (1958). Studies on the ecology of equine encephalomyelitis.—*Amer. J. Publ. Hlth* **48**, 328-335. **3145**

D. summarized field studies over several years in Louisiana, New Jersey, Massachusetts and Alabama which revealed two distinct patterns of activity: (1) progression of the virus (EEE) through a wild bird population at a normal endemic rate, with very little involvement of horses or man; (2) explosive spread of

the virus through the wild bird population, affecting common species of birds not involved in the endemic cycle, resulting in a high level of immunity (45-54%), followed by epidemic outbreaks in horses, man, and game birds.—F.E.W.

PROVOST, A., VILLEMOT, J. M. & QUEVAL, R. (1958). La production du virus capripéste au laboratoire de Farcha. [**Large-scale production of rinderpest goat-virus vaccine in French West Africa.**]—*Bull. épid. Dis. Afr.* 6, 363-372. [In French. Summary in English.] 3146

An account of the apparatus and methods employed at the Farcha laboratory (Chad territory) for the production of a million doses of rinderpest vaccine a year.—R.M.

HUMBLE, A. E. (1959). **Mucosal disease. Recent experience in south east of South Australia.**—*Pastoral Rev.* 59, 121. 3147

A brief note on a mucosal disease of cattle in South Australia in 1957/58. Only young cattle were affected. Severe scouring and rapid loss of condition were the chief clinical features, and mortality was sometimes high. Typical ulcers were present in the mouth.—R.M.

STEVENS, J. G. & CHOW, T. L. (1959). **Effects of some fixatives on inclusion bodies of infectious bovine rhinotracheitis.**—*Proc. Soc. exp. Biol., N.Y.* 100, 856-859. [Authors' summary modified.] 3148

Primary bovine kidney epithelial cells grown in tissue culture monolayers were infected with infectious bovine rhinotracheitis virus, treated with various common fixatives, and stained with haematoxylin and eosin. Bouin's and Zenker's fixatives best demonstrated the characteristic intranuclear inclusion bodies. Further work with components of these two fluids indicated that for best optimum demonstration of inclusions, a highly acid fixative containing acetate ions and a mordant is needed.

GILLESPIE, J. H., BAKER, J. A. & WAGNER, W. C. (1959). **The relationship of infectious pustular vulvovaginitis virus to infectious bovine rhinotracheitis virus.**—*Proc. 62nd Ann. Meet. U. S. Livestock Sanit. Ass., Florida*, 1958 pp. 119-126. [Authors' summary modified.] 3149

Infectious pustular vulvovaginitis virus and infectious bovine rhinotracheitis virus had similar effects in tissue culture. Both viruses were

cytopathogenic, attained the same titres and produced intranuclear inclusion bodies in tissue-cultured bovine kidney cells. When inoculated into cattle, each virus produced similar clinical and pathological features. Cross immunity and cross neutralization were demonstrable: the two viruses were therefore identical. But since the clinical entities are so different, it is suggested that revision of nomenclature be postponed until the pathogenic potential is explored further.

BURDIN, M. L. & PRYDIE, J. (1959). **Observations on the first outbreak of lumpy skin disease in Kenya.**—*Bull. épid. Dis. Afr.* 7, 21-26. [Summary in French. Authors' summary modified.] 3150

A detailed account is given of the outbreak. The history, symptoms and P.M. findings are recorded. The original source of the infection remains obscure but a possible connexion with a preceding skin disease of indigenous sheep was indicated.

VAN ROOYEN, P. J., KÜMM, N. A. L., WEISS, K. E. & ALEXANDER, R. A. (1959). **A preliminary note on the adaptation of a strain of lumpy skin disease virus to propagation in embryonated eggs.**—*Bull. épid. Dis. Afr.* 7, 79-85. [Summary in French. Authors' summary modified.] 3151

The Neethling strain of lumpy skin disease virus (Group 3) has been propagated for not less than 10 passages in embryonated eggs. It appeared to multiply equally well in the embryo and in the chorio-allantoic membrane. It was not lethal for chick embryos. The passage virus continued to produce the typical cytopathogenic effect in monolayer cultures of lamb kidney and testis epithelium.

GREEN, H. F. (1959). **Lumpy skin disease—its effect on hides and leather and a comparison in this respect with some other skin diseases.**—*Bull. épid. Dis. Afr.* 7, 63-94. [Summary in French. Author's summary modified.] 3152

The lesions caused by lumpy skin disease of cattle are described and illustrated as they appeared on the dried raw hide, in sections through lesions and in the leather after tanning. The striking resemblance of the lesions to those of the pox diseases of sheep and goats is illustrated by photographs and photomicrographs of pox and "nodular dermatitis" of sheep and goats. Differences between the lesions of lumpy skin disease and streptothricosis are described.

MOSCOVICI, C. & MAISEL, J. (1958). **Hemagglutination with bovine viruses.** — *Virology* **6**, 769-770. **3153**

Eleven ECBO strains were isolated in monkey-kidney (m.k.) cells from rectal swabs from more than 100 apparently healthy calves. Tissue-culture fluid (TCF) from non-inoculated m.k. cells were used as a control for the haemagglutination (HA) test along with 19 ECHO, and 5 unclassified simian viruses. The tests were performed on human (O), sheep, fowl, cow, g.pig, and horse r.b.c. at both room, and ice-box temperatures. No HA was seen with ECHO, simian, or non-inoculated TCF at either temperature; none given by the ECBO strains on human, sheep, fowl or horse r.b.c. Of 11 ECBO strains 5 gave positive HA against bovine r.b.c. at ice-box, but not at room temperature. 3 different strains were positive with g.pig r.b.c., again also only in the cold.

—W. K. DUNSCOMBE.

I. HAIG, D. A. (1959). **Bluetongue.** — *Proc. XVIth Int. vet. Cong., Madrid* **1**, 215-225. **3154**

II. ALEXANDER, R. A. (1959). **Bluetongue as an international problem.** — *Ibid.* 226-232. [Summaries in Spanish. Author's summaries modified.] **3155**

I. Recently bluetongue has shown a tendency to spread from Africa to other parts of the world. Because the disease was insect-borne and because ruminants may harbour the virus for a long time, control was difficult and the spread was likely to continue.

Many strains of virus have been found and it was suspected that a continuous change of antigenic properties was occurring; the virus may change from one phase to another.

Bluetongue virus was easily cultivated in embryonated eggs, infant mouse brains, hamsters and in monolayer tissue cultures of lamb kidney cells. Tissue culture techniques have made intensive serum-neutralization and complement-fixation studies possible. These tests should lead to a better understanding of the epizootiology of the disease.

The transmission, symptomatology and pathogenicity were discussed and the need for a detailed study of bluetongue in cattle was stressed.

Immunization of all sheep in endemic areas with live attenuated virus was considered the only reliable method available at present for the control of the disease.

II. Attention was directed to the spread of this disease, which was previously regarded as

endemic in the African Continent, to the U.S.A., Southern Europe and the Middle East.

Defects in our knowledge of the method of spread, the virus reservoir of infection and the insect vector were discussed.

Reference was made to the great economic importance of other diseases which show a tendency to spread from the initial foci of infection such as lumpy skin disease and Rift Valley fever.

It was suggested that there should be international co-ordination of research into the control of these diseases.

MATUMOTO, M., SABURI, Y. & NISHI, I. (1959). **Rift valley fever virus in the one-day-old chick embryo.** — *J. Immunol.* **82**, 219-225. [Authors' summary modified.] **3156**

Rift Valley fever virus, pantropic and neurotropic, proliferates very well when inoculated into the blastoderm of day-old chick embryos, although titres were slightly lower in embryos than in mice. Virus multiplication declines with the age of the developing embryo. Serial passage of the virus was readily accomplished in day-old embryos and during passage the virus showed no changes in antigenicity, pathogenicity for mice or growth rate in fertile eggs of various ages.

PÄLSSON, P. A. & SIGURDSSON, B. (1959). Rida. En långsom, progredierende, infektiös nerve-sygdom hos får. [Rida. A slow progressive disease affecting the central nervous system of sheep.] — *Proc. VIIIth Nord. vet. Congr., Helsinki*, 1958, pp. 179-191. [In Danish. English summary modified.] **3157**

A brief description is given of Rida, a slow, progressive disease affecting the c.n.s. of sheep in Iceland. In many ways it resembles scrapie.

Rida has reappeared in the new stock on some of the farms where it was previously enzootic, after all the old stock of sheep had been slaughtered and the districts had been kept free from all sheep for a period of 1-3 years.

The disease has been transmitted experimentally using diluted cerebrospinal fluid as inoculum. There is some evidence that Rida is caused by a virus.

GANNUSHKIN, M. S., ZABLOTSKII, T. M. & BESSARABOV, B. F. (1959). [Rapid diagnosis of swine fever by the method of specific luminescence of serum.] — *Veterinariya, Moscow* **36**, No. 5, pp. 70-72. [In Russian.] **3158**

The apparatus (used in a dark room) consisted of a mercury-quartz lamp with a metal

hood 15 cm. long, at the end of which was a frame 10 × 10 cm. for a Wood's filter. Two test-tubes, one containing normal serum and the other containing the serum under test, were placed in the light issuing from the filter. Luminescence commenced after 10–15 min. exposure and in normal serum ranged from a watery transparency to light green, depending on the degree of haemolysis. The luminescence of serum from pigs with swine fever was violet with bluish tints, or varied from dark green to dark red in the presence of haemolysis.

When sera collected from 2,328 pigs 4–7 days after artificial infection were examined, 61% gave violet and 12% gave dark green or dark red luminescence; 17% gave luminescence similar to that of normal serum, and it was possible that these pigs were not susceptible to infection. Sera collected 1–3 days after infection did not give specific luminescence.—R.M.

BORODULIN, N. A., BÝSTROV, T. A. & ANDRIANOV, V. P. (1959). [Pathological diagnosis of swine fever.] — *Veterinariya, Moscow* 36, No. 2 p. 57. [In Russian.] 3159

Histological examination revealed non-purulent encephalitis with perivascular accumulations of lymphocytes in 107 of 139 field cases of swine fever.—R.M.

POGONYAILO, G. F. (1959). [Dried lapinized virus vaccine against swine fever.] — *Veterinariya, Moscow* 36, No. 2 pp. 51–55. [In Russian.] 3160

The vaccine was tested on 460 pigs of various ages, challenged by s/c inj. of virulent virus between 4 days and 6 months after vaccination. Pigs previously inoculated with crystal violet vaccine did not react to lapinized virus. Severe reactions to lapinized virus could be avoided by simultaneous inoculation of immune serum, but inoculation of serum within 10 days before the virus reduced the immunity obtained.—R.M.

JANOWSKI, H., MAJDAN, S. & MIERZEJEWSKA, M. (1959). Badania nad odpornością u świń szczepionych szczepionką przeciw pomorową z fioletem krystalicznym (CVV). [Immunity to swine fever, following vaccination with crystal violet vaccine.] — *Med. Wet., Warszawa* 15, 71–78. [In Polish. Summaries in English and Russian.] 3161

Vaccination with C.V.V. under field and lab. conditions, and challenge by direct contact and by s/c administration of the virus (100,000 m.l.d.) revealed that in 30–40 kg. pigs, two

5 ml. doses of C.V.V. given with 7–14 days interval, provided quicker and longer lasting immunity than a single dose. This was particularly noted in pigs reared under poor methods of husbandry.—M. GITTER.

UNDERDAHL, N. R., BLORE, I. C. & YOUNG, G. A. (1959). NUD — a previously undescribed disease distinguishable from hog cholera and swine erysipelas.—*J. Amer. vet. med. Ass.* 134, 367–370. [Authors' summary modified.] 3162

A previously unreported disease of pigs (NUD = "Nebraska University Disease") with an incubation period of 2–6 days, high body temperature, and a high mortality is described. It is characterized by petechiated kidneys, enlarged spleen and soft, engorged liver.

In some ways the disease resembles swine fever and swine erysipelas.

The NUD agent grew well in the chick embryo yolk sac, was inactivated at 50°C. for 15 min., was susceptible to antibiotics, and was in the size range of the psittacosis-lymphogranuloma group of viruses.

LARIN, N. M. (1959). The mechanism of immunity in canine virus hepatitis.—*Brit. vet. J.* 115, 35–45. 3163

The proportion of infected dogs showing clinical disease is very small. The virus survives in recovered and consequently immune hosts for a considerable period. The fluctuations in complement-fixing reactions of the serum of immune dogs at different times correspond to the survival and multiplication of the virus.

Resistance of virus to heating and freezing and ultra-violet light was surprisingly high. The virus is immunologically stable.

The advantages and disadvantages of killed and living vaccines were discussed.

—IRENE M. DIXON.

KERMEN, W. (1959). Nosówka u norek w woj. warszawskim. [Distemper in mink in the Warsaw district.] — *Med. Wet., Warszawa* 15, 87–88. [In Polish.] 3164

Several outbreaks in mink were recorded in September 1957 and the course of the disease differed from that in dogs. Diarrhoea and purulent naso-ocular discharge were seldom noted but nervous symptoms, skin lesions and hard pads were constant features, swelling of the anus was also frequently noted. The mortality rate was 10–30% and vaccination proved useful in checking the outbreaks but hyperimmune serum

and antibiotics were of no value. K. considers that all young mink should be vaccinated against distemper in spring.—M. GITTER.

I. LEGENHAUSEN, D. H. & SINKIEWICZ, R. J. (1959). **Studies of Newcastle disease. II. Evaluation of two killed Newcastle disease vaccines.**—*Avian Diseases* **3**, 3-11. 3165

II. LEGENHAUSEN, D. H., SINKIEWICZ, R. J. & SULLIVAN, J. F. (1959). **Studies of Newcastle disease. III. Further studies of a killed Newcastle disease vaccine.**—*Ibid.* 12-22. 3166

I. About 1,600 birds were vaccinated in trials using (1) 80% suspension of embryos etc. in 20% crystal violet soln. inactivated by incubation and (2) an oil emulsified ultraviolet-irradiated commercial vaccine.

Apart from the commercial strain, GB-Texas strain was used for tests and for (1). First doses were given at 10 days of age. Single and double injections were used. With single injections of either (1) or (2) the birds did not withstand challenge, while booster injections after 32 or 228 days produced a distinctly increased resistance for both (1) and (2). This is borne out by serological tests.

Protection with (2) appeared to last longer, while that with (1) seemed to be shorter but of a greater degree (possibly because a similar type of virus was used for challenge).

II. Crystal violet vaccine of the GB-Texas strain inactivated by incubation (as in I. above) was used in some 700 birds. First doses were given at 10 days of age. Large doses were better than small, double injections better than single, particularly when the initial dose was large (2 ml.), and the interval between the two injections was important, the greatest (4 weeks in this case) leading to the best immunity.

—IRENE M. DIXON.

DAVIES, M. C. & SHARPLESS, G. R. (1959). **Electron microscopy of avian lymphomatosis virus propagated in tissue culture.**—*Cancer Res.* **19**, 233-235. 3167

The infectious particle of avian lymphomatosis virus, propagated in cultures of chick-embryo liver cells, was about 90 m μ diam. The number of particles in each tissue-culture infective dose was about 5 for one strain and 35 for another.—R.M.

BADSTUE, P. B. & VELLING, G. (1959). **Encephalomyelitis avium (AE) i Danmark. [Avian encephalomyelitis in Denmark.]**—*Nord. VetMed.* **11**, 331-340. [In Danish. Summaries in English and German.] 3168

A number of outbreaks of avian encephalo-

myelitis in chicks 1-2 weeks old were described. The first outbreak occurred in Jutland. Subsequently the disease has been diagnosed in most parts of Denmark.—R.M.

PAGE, L. A. (1959). **Experimental ornithosis in turkeys.**—*Avian Diseases* **3**, 51-66. 3169

Toxigenic psittacosis virus (NJ1 isolate) was used (a) intratracheally; (b) intraperitoneally; (c) by aerosols containing dried infected excreta; (d) by feeding it in capsules. (c) and (d) are described in detail, 20 turkeys being used in each group at the age of 14 and 23 weeks respectively.

It is concluded that natural spread is almost entirely by air-borne particles of excreta, but that actual initiation in a flock cannot be explained satisfactorily. Mortality in (c) was about 15%. Survivors apparently sterilize their tissues over a period of 8 weeks. Up to 54 days after acute disease, virus could still be isolated from the pericardium and qualitatively demonstrated by mouse passage.—IRENE M. DIXON.

GALE, C., POMEROY, B. S. & SANGER, V. L. (1959). **Characterization in mice of a turkey ornithosis virus of low virulence.**—*J. infect. Dis.* **104**, 295-299. [Authors' summary modified.] 3170

Mice injected i/p with a turkey psittacosis virus of low virulence developed a lingering illness with low mortality. The spleen and liver were enlarged, ascites developed and a cellular deposit was formed on the viscera. Intracerebral inoculations resulted in death depending upon the dilution of the virus. Intranasal inoculations resulted in pneumonia with mortality varying from 50 to 90%. The virus was of low toxicity for mice on intravenous inoculation. Microscopically, marked cellular infiltration of the affected organs was found.

DROZDOV, G. G. (1959). **[Role of domestic animals in the epidemiology of milk-borne diphasic fever of human beings.]**—*J. Microbiol., Moscow* **30**, No. 4 pp. 102-108. [In Russian.] 3171

The fever is caused by a virus pathogenic for mice and immunologically related to the viruses of tick encephalitis, louping-ill and Omsk haemorrhagic fever. It affects families or communities having a common supply of goats' milk and sometimes cows' milk, and it occurs in spring and summer. The virus was isolated by mouse inoculation from 4 of 203 milk samples from goats (but not from cows' milk) and from 99 of 700 ticks (*Dermacentor pictus* and *Ixodes ricinus*). Neutralization tests were positive with sera from 4 of 20 goats and c.f. tests were positive in 16 of 66 goats and 35 of 60 cows.—R.M.

PEARCE, J. M. & WEEKS, D. (1959). **The suppression of lesions and the development of immunity by means of antihyaluronidase in vaccinia and fibroma infections.** — *Amer. J. Path.* **35**, 233-247. [Authors' summary modified.] **3172**

Antihyaluronidase when injected in combination with fibroma virus prevented or diminished the development of the characteristic lesion. Rabbits so treated had a high degree of immunity as measured by immunity to reinfection and by the level of neutralizing antibody in the serum.

Antihyaluronidase when combined with vaccinia virus in most instances appreciably diminished the severity of the resulting vaccinia. Animals recovering from this milder disease were immune to further inoculation and had circulat-

ing antibodies in a titre as high as that in rabbits which had recovered from the unsuppressed disease.

The ability of the antihyaluronidase substances to suppress the lesions and ameliorate the disease, while not interfering with the development of immunity, indicates their possible usefulness in the prophylaxis of virus diseases.

FERRARI, R., CALLERIO, C. & PODIO, G. (1959). **Antiviral activity of lysozyme.** — *Nature, Lond.* **183**, 548. **3173**

Lysozyme has been effective in the treatment of viral infections such as herpes, warts, "aphthosis" [F. & M. disease?] and vaccinia: the authors found that lysozyme precipitated bacteriophage *in vitro* and gave good results when administered to g.pigs experimentally infected with "aphthosis" virus.—E.V.L.

IMMUNITY

ASKONAS, B. A. (1958). **Protein synthesis in mammalian cells with particular reference to antibody formation.**—*Rec. Trav. chim. Pays-Bas* **77**, 611-622. [In English.] **3174**

Plasma cells which are responsible for antibody formation have a highly organized endoplasmic reticulum similar to hepatic and pancreatic cells known to secrete proteins actively. The microsomal fraction contains bound antibody which may be released by destroying the structure of the particles and this probably represents the site of antibody formation. So far it had not been possible to demonstrate antibody synthesis by microsomes, since mild damage or rupture of the cells stopped the incorporation of radioactive amino-acids into antibody extractable with saline.

WARD, P. A., JOHNSON, A. G. & ABELL, M. R. (1959). **Studies on the adjuvant action of bacterial endotoxins on antibody formation. III. Histological response of the rabbit spleen to a single injection of a purified protein antigen.**—*J. exp. Med.* **109**, 463-474. [Authors' summary modified.] **3175**

The authors described histological changes in the rabbit spleen during the primary response to i/v injection of bovine gamma globulin alone and in combination with bacterial endotoxin. The predominant changes associated with antibody formation in animals that received antigen alone were confined to the follicular areas of the spleen. Only minimal changes were seen in the red pulp. No new types of cells appeared after endotoxin stimulus. Rather, a profound augmentation of events observed following a single injection of bovine gamma globulin alone

appears to account for the higher levels of antibody incited by this adjuvant. The cell type important in antibody formation under these conditions appeared to be a modified reticular cell. Plasma cells were not part of the cellular reaction. A hypothetical description of the primary antibody response is given.

BRAMBELL, F. W. R., HEMMINGS, W. A. & OAKLEY, C. L. (1959). **The relative transmission of natural and pepsin-refined homologous antitoxin from the uterine cavity to the foetal circulation in the rabbit.** — *Proc. roy. Soc. Ser. B* **150**, 312-317. [Authors' abst. modified.] **3176**

Natural and pepsin-digested rabbit antitoxins were compared with regard to their transmission to the foetal circulation in rabbits. The foetuses were exposed simultaneously to the two antitoxins in rabbit serum injected into the uterine cavity. The natural antitoxin was transmitted readily but the pepsin-digested antitoxin was not transmitted.

HEMMINGS, W. A. & MORRIS, I. G. (1959). **An attempt to affect the selective absorption of antibodies from the gut in young mice.** — *Proc. roy. Soc. Ser. B* **150**, 403-409. [Authors' abst. modified.] **3177**

In young mice, antibodies from immune sera in the gut pass readily into the circulation. This process is selective in that the amount of antibody reaching the circulation depends on the species of origin of the immune serum; the relative ease of entry of some antibodies was as follows: rabbit 1, g.pig 214, mouse 4.5. The ability to absorb antibodies from the gut de-

creased sharply at 15-17 days, although the amount of homologous iodinated gamma-globulin absorbed at 20 days was quite appreciable. Ingestion of the epsilon toxin of *Cl. welchii* had no demonstrable effect on selective absorption of antibodies from the gut.

MATHEWS, K. P. (1959). Adaptation of the antiglobulin test for use with tannic acid treated erythrocytes.—*J. Immunol.* **82**, 279-289. **3178**

In this adaptation of the antiglobulin (Coombs) test, non-specific adsorption of globulin from antiserum was prevented by preliminary incubation of the sensitized, tanned cells with serum of another species. The method was useful for antisera which ordinarily failed to give direct haemagglutination reactions with sensitized, tanned erythrocytes.—R.M.

MILES, A. A. & WILHELM, D. L. (1958). Distribution of globulin permeability factor and its inhibitor in the tissue fluid and lymph of the guinea pig.—*Nature, Lond.* **181**, 96-98. **3179**
An apparatus has been designed capable of

perfusing the intercellular spaces of the skin of the g.pig, and by which samples of tissue fluid could be obtained without damage to the cells. A permeability factor was demonstrated in tissue fluids which had similar characteristics to that obtained from serum, only it was obtained in the active form, and not the inactive form, proper permeability factor. This difference was probably the result of dilution of the fluid by the Locke's soln. as simple dilution is known to activate the permeability factor. Other tests demonstrated that the tissue fluid contained the natural inhibitor of the globulin permeability factor.

Further evidence of the existence of the intercellular pro-permeability factor was gained by finding it in its inactive form in the lymph.

It is suggested that the proteins constituting the pro-permeability factor/inhibitor system of the blood pass normally into the intercellular fluid and rejoin the circulation *via* the lymph. There may thus be an immediate local extra-muscular activation of the permeability factor following sufficient pathological stimulus.

—W. E. PARISH.

PARASITES IN RELATION TO DISEASE [GENERAL]

KURTPINAR, H. (1958). Les maladies parasitaires des animaux domestiques en Turquie et les moyens de lutte contre elles. [Parasitic diseases of livestock in Turkey.]—*Bull. Off. int. Epiz.* **49 bis**, Nos. 11-12 pp. 568-585. **3180**

Parasitic diseases of livestock in Turkey are those commonly encountered in Asia and Europe. Control measures, including quarantine and restriction of movement of animals, are in

force. A list of the parasites affecting the different species of animals is appended.—T.E.G.R.

ALWAR, V. S. & LALITHA, C. M. (1959). Notes of parasitological interest.—*Madras vet. Coll. Annual* **17**, 17-19. **3181**

Fasciola gigantica was found as an erratic parasite in lungs, ruminal wall and duodenum of a heifer calf; microfilariae were observed in the peripheral blood of elephants; *Trypanosoma evansi* was noticed in a mongoose.—R.M.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PARR, H. C. M. (1959). Studies on *Stomoxys calcitrans* (L.) in Uganda, East Africa. I. A method of rearing large numbers of *Stomoxys calcitrans*. — *Bull. ent. Res.* **50**, 165-169. [Author's summary modified.] **3182**

P. discussed the importance of certain species of *Stomoxys* in Uganda, the possibility that these species may be responsible for the mechanical transmission of trypanosomiasis, and the effects of severe biting of *Stomoxys* on milk yield and body weight in cattle.

A satisfactory method was described for rearing large numbers of *S. calcitrans*.

PFADT, R. E. (1959). Fall dusting to control the sheep ked. — *J. econ. Ent.* **52**, 380-382.

[Author's summary modified.] **3183**

The sheep ked, *Melophagus ovinus*, was more difficult to eradicate by power dusting in autumn than in spring after shearing. Although a 1.5% dieldrin dust eradicated infestation of keds in spring, a 5% dieldrin dust was needed in autumn. Diazinon at 5% also provided eradication in autumn but the following dusts did not: 3% dieldrin, 1.5% aldrin, 5% Co-ral (*O*-(3-chloro-4-methylumbelliferone), *O*, *O*-diethyl phosphorothioate), 1% diazinon, 5% dicapthion, 5% Korlan (*O*, *O*-dimethyl *O*(2, 4, 5-trichlorophenyl) phosphorothioate), and 5% malathion.

Hand-dusting tests likewise showed that keds were harder to eradicate in autumn. Of the

insecticidal dusts tested in both seasons 1.5% malathion, and 5% Korlan eradicated infestations of sheep ked every time tested.

- KURCHATOV, V. I., NECHINENNYI, D. K. & ROMANOV, V. M. (1959). [Eradication of ectoparasites in domestic mammals and birds in the Crimea.] — *Veterinariya, Moscow* 36, No. 5, pp. 16-17. [In Russian.] 3184

See also absts. 3265-3267 (toxicity of insecticides); 3342 (book on DDT).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

- VERCRUYSSSE, R. & DERDE, E. (1959). Onderzoek naar de verspreiding van de leverbot bij het rund in Oost- en West-Vlaanderen. [Distribution of liver fluke in cattle in East and West Flanders.] — *Vlaams diergeneesk. Tijdschr.* 28, 170-176. [In Flemish. Summaries in English, French and German.] 3185

Faeces of 2,000 cattle were examined for liver-fluke eggs during winter housing. The average proportion of cattle infected was 27.8% (16% in West Flanders and 38% in East). The average proportion of farms infected was a third in West Flanders and 85% in East.—R.M.

- SARWAR, M. M. (1958). Ecology and distribution of *Limnaea auricularia rufescens*, a proven intermediary of *Fasciola gigantica*, in the Punjab region of Pakistan. — *Agric. Pakist.* 9, 39-51. 3186

In the alluvial plains of the Punjab the snail occurred only around irrigation dams. It occurred commonly in the valleys of the Outer Himalayas, particularly where streams were dammed for irrigation, and fascioliasis was widespread in these valleys.—R.M.

- I. NARDI, E. (1959). Su di un trematode parassita intestinale del cane e della volpe. [An intestinal trematode (*Ascocotyle (Phagicola) italica*) of dogs and foxes, in Italy.] — *Vet. ital.* 10, 158-162. 3187

- II. NARDI, E. (1959). Segnalazione di "Cryptocotyle concavum" (Creplin 1825) parassita dell'intestino tenue del cane e della volpe. [*Cryptocotyle concavum* in the small intestine of the dog and fox.] — *Ibid.* 257-260. 3188

I. The helminth, *Ascocotyle (Phagicola) italica*, which is described in detail, was present in the small intestine of 4 of 10 foxes and 2 of 5 dogs examined. This is stated to be the first record in the fox in Italy. In dogs, the parasite was first reported in 1906 but not since.

II. In the course of the investigations reported in the preceding abst. *Cryptocotyle concavum* was found in the small intestine in 3 of

Intensive measures during the past 5 years against ticks by treating animals with dusts or dips of BHC and DDT and by spraying farm buildings with insecticides resulted in great reductions in the incidence of *Th. annulata* infection of cattle and piroplasmiasis in cattle, sheep and horses. Sheep scab was eradicated from the Crimea in 1957.—R.M.

the 10 foxes and in 1 of the 5 dogs examined. This is stated to be the first reported case in the fox in Italy. The parasite is described. —T.E.G.R.

- NARDI, E. (1958). Tiflite emorragica del pollo sostenuta da *Postharmostomum commutatum* (Diesing, 1858). [Haemorrhagic typhlitis caused by *Brachylaemus commutatus* in fowls.] — *Vet. ital.* 9, 977-982. 3189

The condition was diagnosed P.M. in fowls in 3 flocks, of which 2 sustained a mortality of 10 and 15% respectively. Mortality was attributed to heavy infestation with the trematode, *Brachylaemus commutatus*, which is described in detail; in the third mortality was from other causes. Large numbers of the parasite were found in the caeca—attached to the mucosa or free in the lumen. Heavy infestation caused anaemia, haemorrhagic diarrhoea and emaciation leading to cachexia and death, 10 to 15 days after the onset of symptoms; intense haemorrhagic typhlitis and degeneration of the liver were the main findings.—T.E.G.R.

- OKOSHI, S. (1958). La schistosomiase japonaise chez les animaux domestiques. [Schistosomiasis in livestock in Japan.] — *Bull. Off. int. Epiz.* 49 bis, Nos. 11-12 pp. 586-592. [In English, pp. 593-599.] 3190

The disease, caused by *Schistosoma japonica*, is endemic in areas favourable to the intermediate host, *Oncomelania nosophora*. It is widespread in cattle and dogs, but rare in horses. Symptoms appear 3-4 weeks after infestation.

Diagnosis is by microscopic examination of pieces of rectal mucosa: two veterinarians can examine 100 cattle daily. All animals in infected regions are examined each winter and infected animals are treated with sodium antimony tartrate (8-10 mg./kg. body wt. for cattle, 12 mg. per kg. for dogs) injected i/v, repeated several times. Examination of the faeces should be carried out 2 months later.—T.E.G.R.

PITCHFORD, R. J. (1959). **Cattle schistosomiasis in man in the Eastern Transvaal.** — *Trans. R. Soc. trop. Med. Hyg.* **53**, 285-290. [Author's summary modified.] **3191**

Schistosome ova indistinguishable from those found in cattle, sheep, and goats, have been found in the Eastern Transvaal in the urine and faeces of man, with incidences up to 23%. All subjects were also infected with *S. haematobium*, and all except one with *S. mansoni*.

Measurements of ova were quite distinct from those of *S. haematobium*. There may be more than one schistosome parasitizing cattle and there is slight evidence, that hybridization might be occurring between *S. haematobium* and a cattle schistosome.

TCHOUBABRIE, I. T. (1958). L'efficacité de l'arséniate d'étain contre la moniézirose et la thysaniézirose des ovins, l'ascaridiose et les cestodoses des poules. [Tin arsenate, an efficient anthelmintic against tapeworm in sheep and fowls.] — *Bull. Off. int. Epiz.* **49 bis**, Nos. 11-12 pp. 633-639. **3192**

Tin arsenate was stated to be 100% effective in the treatment of moniezia infestation in lambs. The dose was 0.3-0.4 g. per animal. 18 hours' fasting is essential and water and purgatives are to be withheld on the day of treatment. In doses of 0.7-1.0 g. per animal (19-31 kg. live weight) it was 92% effective against *Thysanosoma*. Good results were also obtained in the treatment of ascaridiosis and of coccidiosis in fowls. The dose was 0.07 g. (in gelatin capsule) for birds aged 3-6 months and 0.2 g. for birds over 6 months. Magnesium arsenate was also effective. The drugs were not toxic.—T.E.G.R.

SAWADA, I. (1959). [Dichlorophen preparations for the removal of *Railletina cesticillus* from chickens.]—*J. Jap. vet. med. Ass.* **12**, 56-59. [In Japanese. Abst. from English summary.] **3193**

A combination of equal parts of dichlorophen and phenothiazine was effective in removing *R. cesticillus* and *R. echinobothrida* from adult fowls. The dose of each drug was 300 mg. per kg. body wt.; lower doses were not as effective. An alternative preparation contained dichlorophen equivalent to 120-150 mg./kg., phenothiazine equiv. to 100-130 mg./kg. and piperazine sulphate equiv. to 50-80 mg./kg. The preparations did not affect egg production.—R.M.

ENIGK, K. & DÜWEL, D. (1959). Die Therapie beim Bandwurmbefall des Huhnes. [Treatment of cestode infestation in fowls.]—*Dtsch.*

tierärztl. Wschr. **66**, 10-16. [Summary in English.] **3194**

Seventy-five chemicals were tested for treatment of tapeworm infestations in fowls. 564 experiments were made with hens infected artificially with: *Davainea proglottina*, *Railletina cesticillus*, *Choanotaenia infundibulum* and *Hymenolepis carioca*. The difficulty in eradicating *Davainea*, the most resistant, was thought to be due to its small size which permits it to penetrate into the gut wall without undue distension of the mucosal glands, its last segment protruding only slightly into the lumen. Photomicrographs are appended. All types of drugs were tried, e.g. antibiotics, vegetable and mineral drugs etc. The scolex of *Davainea* was destroyed only by di-n-butyltin dilaurate and by a combination of hexachlorophene and barium antimonyltartrate, but di-n-butyltin dilaurate also eliminated all other tapeworms, and is cheap and safe.—IRENE M. DIXON.

YAMASHITA, J., OHBAYASHI, M., KITAMURA, Y., SUZUKI, K. & OKUGI, M. (1958). Studies on echinococcosis. VIII. Experimental *Echinococcus multilocularis* in various rodents; especially on the difference of susceptibility among uniform strains of the mouse.—*Jap. J. vet. Res.* **6**, 135-156. [In English.] **3195**

The echinococcus developed rapidly and extensively in various voles, field mice, chipmunk, gerbils and two strains of house mice. In 8 other strains of house mice it developed very poorly.—R.M.

SHUMAKOVICH, E.-E. (1958). Coenurosis of sheep and its control in the U.S.S.R.—*Bull. Off. int. Epiz.* **49 bis**, Nos. 11-12 pp. 640-642. [In English.] **3196**

Coenurosis occurs in a number of sheep-breeding regions in the U.S.S.R. The eradication of coenurus and echinococcus was being studied in various veterinary institutions. In the Stavropol territory (Northern Caucasus) V.I. Pukhov stressed the need for regular anthelmintic treatment of sheep-dogs. Coenurosis had been eradicated from several regions by dosing the dogs every 6 weeks with male fern [*V.B.* **26**, 3201]. Nikitin, studying the epizootiology of coenurosis, echinococcosis and taeniasis, had obtained data on seasonal influences of this infestation in dogs. From 1958 the Skryabin Institute of Helminthology would begin work on the epizootiology of coenurosis and would direct control measures in the Volga Area.—BRENDA M. WILSON.

MARTINI, I. (1959). Dati recenti ed interessanti sulle trichine e sulla trichinosi. [Recent data on trichinosis.]—*Vet. ital.* **10**, 145-157. **3197**

This general account, illustrated by photomicrographs, deals with the morphology, development and pathogenicity of trichinella, and the effect of low temperatures on the parasite.

—T.E.G.R.

SHICHOBALOVA. (1958). **Radioactive radiations for sterilization of meat products infested with larval forms of helminths.** — *Bull. Off. int. Epiz.* 49 bis, Nos. 11-12 pp. 643-646. [In English.] 3198

Pieces of muscle from pigs infested with trichinella were irradiated with X-rays (from 1-30,000 r) and with gamma-rays of Co⁶⁰; they were fed to mice which were killed after various intervals and the effects compared with controls fed non-irradiated infested muscle. In the test mice a lower percentage of larvae remained and started developing in the intestine. The adult worms left the host 2 days after emergence; the males were less resistant than the females, but both were smaller than those in the controls and their development was retarded, a larger proportion of those leaving the host being immature. Sufficient radiation could produce complete sterility in either sex, so that the host developed only the intestinal form of infestation (the severity of which depended on the number of worms and therefore on the radiation dosage). The number of larvae in the muscles varied inversely with the degree of radiation; in one case 5,000 r had produced almost complete sterility. The results with gamma-rays were analogous.—BRENDA M. WILSON.

STEWART, D. F. (1959). **The immune reactions to nematode infestation.**—*Proc. XVIth Int. vet. Congr., Madrid* 1, 267-278. [Summaries in German and Spanish. Author's summary modified.] 3199

The literature relating to the mechanisms of resistance of the host to nematode infestation was discussed. A distinction was made between the response of the host to invasive and to non-invasive parasites. Further study might reveal that the effects of the immune response were due to interference with the physiological functions of the parasites.

The serological reactions which take place during self-cure of sheep infested with *Haemonchus contortus* have been investigated by complement-fixation, haemagglutination and the Ouchterlony agar-diffusion precipitin techniques. Attention was drawn to the significance of the third ecdysis of *H. contortus* in relation to the self-cure phenomenon. The main antigenic stimulus was derived from substances released from the larvae during the third ecdysis which

takes place in the abomasum. Additional experimental evidence emphasized the local nature of the self-cure reaction.

ROSE, J. H. (1959). ***Nematodirus helvetianus*, an intestinal worm of cattle.**—*Vet. Rec.* 71, 470-472. [Author's summary modified.] 3200

Nematodirus helvetianus is briefly described and illustrations are provided for identification of the 4 species of *Nematodirus* recorded from British cattle.

GIBSON, T. E. (1959). **The development of resistance by sheep to infection with the nematodes *Nematodirus filicollis* and *Nematodirus battus*.**—*Brit. vet. J.* 115, 120-123. [Author's summary modified.] 3201

Experiments on worm-free sheep, aged from 8-89 weeks, showed that sheep over six months of age were resistant to the effects of infestation with *Nematodirus* spp. Although larvae were able to establish themselves in mature sheep their development was inhibited and eventually fewer worms reached maturity than in the susceptible 8-week-old lamb. Previous infestation appeared to convey no significant immunity. G. discussed these findings in relation to the control and epidemiology of nematodiriasis.

GIBSON, T. E. (1959). **The survival of the free-living stages of *Nematodirus* spp. on pasture herbage.**—*Vet. Rec.* 71, 362-366. [Author's summary modified.] 3202

The fluctuations in the numbers of *Nematodirus* larvae on pasture herbage were studied from November 1955 to August 1958. Differences in the level of infestation with *N. battus* and *N. filicollis* are referable to the different rate at which the eggs of these two species develop. The spring peak of pasture larval infestation, which is responsible for epidemics of nematodiriasis, is referable to mass hatching of overwintering eggs and appears to be caused by the spring rise in temperature. Although a pasture may be heavily infected with larvae after mass hatching of the eggs in spring, the larvae of both species are short-lived and the pasture will be free from infestation the following year when it may safely be grazed by lambs.

GORDON, H. MCL. (1958). **The effect of worm parasites on the productivity of sheep.**—*Proc. Aust. Soc. Anim. Prod.* 2, 59-68. 3203

G. gives detailed reports of experiments with sheep which show the adverse effects of helminthosis on appetite, growth and fattening, wool quality and quantity, and milk production. The effects of heavy infestations are spectacular

but in the aggregate serious outbreaks are uncommon. The more insidious effects of lighter infestations may not be recognized unless precise measurements are made. Parasitic diseases are a source of serious economic loss and can seriously interfere in field trials with grazing animals.—R. I. SOMMERVILLE.

IVACHKINE, V. M. (1958). La parabronématose une nouvelle helminthose des ruminants. Epizootologie, prophylaxie, élucidation du cycle évolutif de son agent. [*Parabronema skrjabini* infection of animals.] — *Bull. Off. int. Epiz.* 49 bis, Nos. 11-12 pp. 353-360. 3204

The nematode, *Parabronaema skrjabini*, affects large and small ruminants, including *Gazella gutturosa*, *G. subgutturosa* and *Saiga tatarica*. It is widespread in semi-desert regions and in the steppes. It occurs in the abomasum, where it penetrates the mucosa, causing gastritis, weakness, loss of weight and even death. The parasite (whose life cycle is described) has an intermediate host, *Lyperosia titillans*. Infestation occurs at pasture, through ingestion of infested *lyperosia* imagos, from mid-July to mid-August. The parasites may survive in the definitive host for up to 15-19 months. Phenothiazine, by the mouth, is considered effective in prevention and treatment.—T.E.G.R.

SCHANZEL, H. (1959). O zależności między wiekiem owiec a inwazją nicieni płucnych. [Relationship between age of sheep and lung-worm infestation.] — *Med. Wet.*, Warszawa 15, 79-81. [In Polish. Summaries in German and Russian.] 3205

S. examined lungs of 118 slaughtered Merino sheep (all from one flock) comprising 63 yearlings and 55 adults. The extent of infestation with *Dictyocaulus filaria* and *Protostrongylus kochi* was the same in both age groups. Twice as many adult *D. filaria* were found in the lungs of young sheep as compared with the adults but the number of *P. kochi* was 33% higher in the lungs of adults. In another group of 42 year-

lings and 68 adults (5-6 years old) the intensity of *Muellerius capillaris* infestation was 6½ times higher in the adult sheep. S. considers that the resistance of adult sheep to *P. kochi* is not lowered, but since members of the subfamily Protostrongylidae can live for several years the number of these parasites in sheep lungs is cumulative.—M. GITTER.

BEAVER, P. C. (1959). Visceral and cutaneous larva migrans.—*Publ. Hlth Rep.*, Wash. 74, 328-332. 3206

B. discussed the occurrence of *Ancylostoma braziliense* larvae under the skin and *Toxocara canis* larvae in the viscera of human beings. He suggested that more surveys of the incidence in dogs and cats were needed to assist epidemiological investigations.—R.M.

GIL'DENBLAT, A. A., POTEMKIN, V. I. & PAVLOVA, N. V. (1959). [Chlorophos as an anthelmintic.] — *Trud. Mosk. vet. Akad.* 27, 91-95. [In Russian.] 3207

Chlorophos [O,O dimethyl-2,2,2-trichloro-1-oxyethylphosphonate or Dipterex] was not toxic for calves or sheep when inj. s/c at 15-25 mg./kg. body wt. as a 10-15% aqueous soln., nor for dogs when given by mouth at 40-100 mg./kg. It had no anthelmintic action against lungworms in 3 sheep, liver fluke in 2 heifers and 4 sheep and trichostrongyles in 3 heifers and 4 sheep, but was effective against ascarids in 4 dogs and against *Passalurus ambiguus* in 3 rabbits when given by mouth at 40-50 mg./kg. body wt.—R.M.

BLAKE, C. D. (1958). A turbidimetric method for estimating the number of nematode larvae in a suspension.—*Proc. Linn. Soc. N.S.W.* 83, 241-244. 3208

Using a modified Peter's counting chamber, a standard curve was constructed relating the logarithm of absorption and the number of nematodes in the suspension. For *Anguina agrostis* (Steinbuch), the error in the prediction from the standard curve was less than 5%.

—R. I. SOMMERVILLE.

See also absts. 3093 (helminths and bacterial infections); 3281 (pharmacology of phenothiazine).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

LOMBARD, L. S. & WITTE, E. J. (1959). Frequency and types of tumors in mammals and birds of the Philadelphia Zoological Garden. — *Cancer Res.* 19, 127-141. 3209

An increased frequency of neoplasms

between 1935 and 1955, compared with 1901-1934, was partly attributable to longer life of captive wild animals due to better care. In primates, carnivores, artiodactyls and birds, epithelial neoplasms were much more numerous

than those of mesenchymal cells. There are many interesting observations on the occurrence of each type of neoplasm.—R.M.

PAMUKCU, A. M., BROWN, R. R. & PRICE, J. M. (1959). **Tryptophan metabolites in the urine of Turkish cows with urinary cancer.**—*Cancer Res.* **19**, 321-325. [Authors' summary modified.] **3210**

The occurrence of tumours of the urinary bladder of cows in Turkey has been previously reported [*V.B.* **28**, 1139]. The concentrations of most tryptophan metabolites in the urine of cows with tumours were not higher than in the urine of normal cows in Turkey, but the increase of acetyl-kynurenine in cows with tumours was significant. These cows also excreted more ortho-aminohippuric acid than normal cows. The possible role of urinary tryptophan metabolites in bladder carcinogenesis was discussed.

KÖHLER, H. (1959). Weitere Beobachtungen am sogenannten Mastozytom des Hundes. [**Mastocytoma in dogs.**] — *Wien. tierärztl. Mschr.* **46**, 364-374. [Summaries in English, French and Italian.] **3211**

K. listed 48 cases of mastocytoma, of which more than half were in Boxers. There is no sex predisposition. The frequency increases with age; the tumour is liable to recur after removal. Metastasis is rare; aetiology unknown. Tumours are frequently located on exposed parts of the body. Histologically they are composed of mast cells, eosinophile granulocytes, plasma cells and lymphocytes, variously arranged in the subcutis and corium. As in human lymphogranulomatosis, there may be gradual transition between purely granulomatous processes and autonomous excrescences.—IRENE M. DIXON.

LAMBERT, N. H. & PARKHILL, E. (1959). **Preliminary clinical report on the treatment of tumours in cats and dogs with vitamin E.**—*Vet. Rec.* **71**, 359-362. [Authors' summary modified.] **3212**

Case histories of 12 dogs and 3 cats treated with vitamin E are presented. The results suggest that natural vitamin E has an effect on the tissue reaction surrounding a tumour, thus rendering it more easily operable, or occasionally making surgery unnecessary.

SEDLMEIER, H. & DAHME, E. (1958). Morphologie und Histogenese des Lungenkarzinoms bei Fleischfressern. [**Morphology and histogenesis of pulmonary carcinoma in dogs and cats.**] — *Berl. Münch. tierärztl. Wschr.* **71**, 416-421. [Summary in English.] **3213**

The authors conclude that primary adenoma of the lungs derives from the alveolar epithelium, though possibly the epithelium of the terminal bronchioli may also be involved. The role played by bronchial lymph nodes is not cleared. The authors therefore insist that the term "alveolar cell carcinoma" is more correct than "pulmonary adenomatosis". Of many suspected causes chronic irritation is considered most likely.

These conclusions are drawn from P.M. examination of 2,851 dogs, over 5 years, in which 5 primary pulmonary carcinomata were found. These are cited in detail. Twelve photomicrographs are provided. Metastasis is thought to be by direct spread and/or by cells floating in mucus and being implanted in alveolar walls, and less often *via* the lymph stream.

One case investigated in a cat corresponded to the above.—IRENE M. DIXON.

DAHME, E. & SCHLEMMER, W. (1959). Endokrin aktive Nebennierenmarktumoren des Hundes und ihre Auswirkungen auf die arterielle Blutstrombahn. Eine morphologische und pharmakologisch-chemische Studie. [**Endocrine action of tumours of the adrenal medulla and their effect on arteries in dogs. Morphology and pharmacology.**] — *Zbl. Vet-Med.* **6**, 249-259. [Summaries in English, French and Spanish.] **3214**

In two dogs which died with signs of circulatory failure, tumours of the adrenal medulla, with endocrine activity, were found P.M. In one (an 11-year-old bitch) the tumour was a phaeochromocytoma. In the other (a 7-year-old male) it was a phaeochromoblastoma. One tumour contained 1,000 µg. noradrenaline per g., and the other 400 µg. The arterial vessels of the older dog showed severe sclerosis as in canine renal hypertension. In the younger one there were only early changes of the intramural arteries of the cardiac muscle.

The acute muscle fibre degeneration and oedema of the blood vessel wall are thought to be due, as in a similar condition in man, to an increasing collection of an amine in the cardiac muscle, producing some form of hypoxia which cannot be compensated even by increased circulation. Whether this is due mainly or totally to the activity of the adrenals is not certain.

Noradrenaline contents of the tumours were in no particular ratio to their activities. The liberation mechanism is not understood.

A noteworthy feature of circulatory disturbance of endocrine origin is the increased hyaline content of the arterioles of the parenchyma of the brain. It is concluded that the increased

blood pressure is the main cause of the change in heart and blood vessels.—IRENE M. DIXON.

- AMBS, E. & THORELL, B. (1959). Die Cyto-genese bei der Virus-Leukämie des Hühnes. [**Cytogenesis of virus leukaemia in fowls.**]—*Acta haemat.* **21**, 284-294. [In German. Summaries in English and French.] **3215**

Chicks aged 7 days were inoculated i/v

with a virus isolated from a hen with erythro-leucaemia [see Fagreus & Thorell *Exp. Cell Res.* **10**, 515 (1956)]. Bone marrow from chicks killed at 24-hour intervals was examined from the 3rd to 6th days after infection. A line of leucaemic cells which originated from undifferentiated erythroblasts showed abnormal haemoglobin formation.—R.M.

See also abst. 3339 (neoplasms of rodents).

NUTRITIONAL AND METABOLIC DISORDERS

- FRENS, A. M. (1959). **Intensive grassland production and cattle health.**—*Proc. XVIIth Int. vet. Congr., Madrid* **1**, 407-421. [Summaries in French, German and Spanish.] **3216**

Various nutritional disorders and other diseases associated with pasture improvement were discussed. These included grass tetany, copper deficiency, sodium imbalance, excessive formation of ammonia in the rumen, and deficiency of fibre in young grass.—R.M.

- ROMBAUTS, P. (1959). L'anabolisme de gestation chez la brebis. [**Anabolism of pregnancy in ewes.**]—*C.R. Acad. Sci., Paris* **248**, 1859-1862. **3217**

Gestation was accompanied by increased retention of nitrogen and minerals. When a normal ration was fed, the substances retained were not only sufficient for the requirements of the foetus, but also permitted an increase in body wt. of the ewe. The extent of this anabolism was not related to the number of foetuses.—R.M.

- RUSSELL, R. S. (1958). **Deposition of strontium-90 and its content in vegetation and in human diet in the United Kingdom.**—*Nature, Lond.* **182**, 834-839. **3218**

The behaviour of strontium-90 in plants and soils, and its absorption by plants is discussed. Different types of vegetation absorb different amounts of strontium-90 and this cannot be totally explained by differences in the calcium content of the soil. 'Stem base' absorption of strontium-90 entrapped in the root mat may be of great importance and explain the high level of strontium-90 in hill pastures.

—ELIZABETH J. CASTLE.

- REBER, E. F., MALHOTRA, O. P., KREIER, J. P., NORTON, H. W. & BEAMER, P. D. (1959). **Effects of feeding irradiated flour to dogs. I. Growth.**—*Toxicol. appl. Pharm.* **1**, 55-60. **3219**

Young dogs were fed for 6 months a diet containing 35% flour which had been exposed to

37,200 or 74,400 rads per batch of 2 kg. These doses were higher than those which killed the eggs of granary weevils and flour beetles. The irradiated flour had no apparent effect on growth or haematology.—R.M.

- O'DELL, B. L., NEWBERNE, P. M. & SAVAGE, J. E. (1959). **An abnormality of the proventriculus caused by feed texture.**—*Poult. Sci.* **38**, 296-301. [Authors' summary modified.] **3220**

A large proportion of chicks fed a purified diet composed chiefly of soya bean protein and glucose developed an enlarged proventriculus characterized by atrophic musculature and grossly dilated and hypertrophied submucosal glands. In some cases the glands had undergone degeneration and sloughing. This syndrome starts soon after chicks are fed such diets and is clearly evident at one week of age. Associated with it is a poorly developed gizzard and a tendency toward a pendulous crop.

The hypertrophic proventriculus developed when all the ingredients of the diet were finely divided, and was prevented by maize meal, maize grits or ground wheat, but not by sand or grit. The syndrome appears to have no significant effect on the rate of growth of the chick.

- I. MANGAN, J. L. (1959). **Bloat in cattle. XI. The foaming properties of proteins, saponins, and rumen liquor.**—*N. Z. J. agric. Res.* **2**, 47-61. **3221**

- II. JOHNS, A. T., McDOWALL, F. H. & MCGILLIVRAY, W. A. (1959). **Bloat in cattle. XII. The effect of orally administered penicillin on body weight of lactating cows, on milk production, and on production and composition of fat.**—*Ibid.* 62-71. [Authors' summaries modified.] **3222**

I. The foaming properties of rumen liquor, bovine salivary mucoprotein, cytoplasmic protein from red clover, and saponins from various pasture legumes were examined.

Foam strengths of the saponin foams have

pH optima, those from red clover and lucerne being pH 4.5 and 5. The presence of calcium in the saponin is necessary for the formation of rigid foams.

Foams from red-clover cytoplasmic protein show maximum strengths at pH values ranging from 5.4 to 6. The foaming properties are markedly dependent on salt concentration.

Salivary mucoprotein has greatest foam strength above pH 7.5, but some samples have a secondary peak at pH 6.5.

Rumen liquor from cows fed on red clover has a pH optimum for foam strength at pH 5.4 to 5.7 similar to cytoplasmic protein. The particulate matter in rumen liquor has considerable anti-foaming properties.

The evidence indicates that cytoplasmic protein is of major importance as a foaming agent in causing bloat in cattle.

II. Procaine penicillin was given in tablet form by a balling gun to one cow of each of three monozygous twin pairs. Doses were 200,000 units every third day for 15 days, 500,000 units every third day for 12 days, and 200,000 units every third day for 5 months. There was no evidence of transfer of penicillin to the milk. There was no adverse effect on the weights of the cows, on the yields of milk and butter-fat, on composition of the milk. On this evidence it appears that penicillin may safely be used for treatment and control of bloat at doses up to 500,000 units every third day.

WOOLDRIDGE, R. L. & BELLINGE, W. H. S. (1959). **An experiment on the control of bloat.** — *E. Afr. agric. J.* **24**, 237-239. [Authors' summary modified.] **3223**

Daily feeding of 10 mg. benzylpenicillin to each cow as a food supplement reduced the incidence of bloat. It was considered that the method warranted further experimentation to discover the optimum dosage for maximum control of bloat.

HARE, J. H., SOULE, R. P., JR. & ZUCKER, H. (1959). **Palatability of broad-spectrum antibiotics for swine.** In "Antibiotics annual 1958-1959" pp. 1047-1050. [New York: Medical Encyclopedia Inc.] **3224**

Growing pigs preferred oxytetracycline to chlortetracycline, when both were at 40 g./ton of feed. In the pure crystalline form they preferred chlortetracycline. There was no difference in consumption when choice was absent, and the efficacy of the two substances in growth stimulation was equal.—F. R. PAULSEN.

THOMAS, J. W., McDOWELL, R. E. & McMULLAN, H. W. (1959). **Effects of feed-**

ing aureomycin to dairy calves.—*J. Dairy Sci.* **42**, 658-665. [Authors' summary modified.] **3225**

Aureomycin was fed for 3 months to calves in two herds under different feeding and management. Increased body weight gain was obtained in both herds. However, the greatest increase occurred after the milk-feeding period in the herd where no milk was fed after 2 months of age. An increase in feed consumed (mostly roughage), efficiency of feed utilization, and a decrease in the incidence of diarrhoea were observed when aureomycin was fed. When aureomycin was withdrawn the calves gained less and had a lower efficiency for the next month or two than calves that had not received aureomycin. Heifers that had been fed aureomycin as calves weighed no more at 6-12 months than controls. Therefore, the major advantage in feeding aureomycin to calves is the reduction in the incidence of diarrhoea and not the temporary increase in growth rate. There was an indication that the aureomycin growth response varied in calves by different sires.

STOKSTAD, E. L. R. & JUKES, T. H. (1959). **Studies of the growth-promoting effect of antibiotics in chicks on a purified diet.** In "Antibiotics annual 1958-1959" pp. 998-1002. [New York: Medical Encyclopedia Inc.] **3226**

In chicks having sucrose as carbohydrate source, the amount of penicillin required for maximum growth response increased over tenfold during extensive use over several years, retaining its effect with larger doses. In 1958 growth promotion by neomycin and oleandomycin showed a downward trend.

—F. R. PAULSEN.

PRICE, K. E., ZOLLI, Z., JR., ATKINSON, J. C., COLLINS, A. P. & LUTHER, H. G. (1959). **Antibiotic inhibitors. III. Reversal of calcium inhibition of intestinal absorption of oxytetracycline in chickens by certain acids and acid salts.** In "Antibiotics annual 1958-1959" pp. 1020-1032. [New York: Medical Encyclopedia Inc.] **3227**

In the ligated duodenal loop of chickens, 0.16-10.0 mg. doses of oxytetracycline were absorbed linearly, but inhibited by calcium. This inhibition was reversed by citric acid, sodium metaphosphate, potassium oxalate, methenamine mandelate, or tetra-sodium E.D.T.A., but was unaffected by kojic acid. Levels of oxytetracycline in serum and liver were increased by teraphthalic acid, with or without exogenous calcium, and antibiotic level in urine was lowered.—F. R. PAULSEN.

KOVAL'SKII, V. V. & RAMBIDI, M. I. (1958). [Influence of cobalt on carbohydrate metabolism in sheep.]-*Proc. Lenin Acad. agric. Sci.* **21**, No. 11 pp. 29-33. [In Russian.] **3228**

Carbohydrate metabolism was tested by following changes in blood sugar during 2 hours after oral administration of 100 g. glucose. 12 sheep from a cobalt-deficient district were used; 4 were healthy and the remainder showed signs of deficiency. The results indicated a reduced ability to break down glucose and to synthesize glycogen. Feed supplements of cobalt chloride led to normal glycaemia curves in most cases. The role of cyanocobalamin was discussed.

—R.M.

MACHLIN, L. J., GORDON, R. S., MEISKY, K. A. & MADDY, K. H. (1959). Relationship of oxidative degradation to toxicity in certain fats.—*Poult. Sci.* **38**, 579-585. [Authors' summary modified.] **3229**

Mortality and other signs of toxicity (mainly hydropericardium) were produced in chickens in as little as 6-7 days after the addition of certain toxic fats to a purified diet.

Alpha tocopherol did not prevent the toxicity when fed or injected. A dietary supplement of 0.1 p.p.m. selenium as selenite was also ineffective.

When toxic fat was exposed to ultra-violet irradiation, heat (80° or 105°C.) and oxygen, the fat was degraded as evidenced by weight loss and peroxide formation, and the toxicity increased.

The antioxidant Santoquin reduced the mortality and severity of hydropericardium resulting from the feeding of 4% toxic fat in one of two experiments. It was highly effective in reducing mortality and incidence of hydropericardium resulting from the feeding of 7% toxic fat which had been irradiated with u.v. light.

Destruction of "peroxide" in the toxic fat by reduction with potassium iodide did not reduce the toxicity.

5-week-old birds were able to tolerate as much as 10% toxic fat if they had received a non-toxic fat from 0 to 5 weeks.

HANSON, L. J., SORENSSEN, D. K. & KERKAMP, H. C. H. (1958). Essential fatty acid deficiency—its role in parakeratosis.—*Amer. J. vet. Res.* **19**, 921-930. **3230**

Parakeratosis and decreased rates of growth were produced in 5-7 days in healthy weaned pigs by a low fat ration even when supplemented with zinc sulphate at 200 p.p.m. or with hydrogenated fat at 16% by weight, but no skin

lesions developed when the ration was supplemented with soya bean oil containing 54% linoleic acid at the level of 23% by weight. High levels of calcium in the ration, by decreasing the digestibility of fat, tended to increase the severity of the disease. Spontaneous recovery began within 3 weeks. Treatment by supplementing the ration with oil or zinc, reducing the intake of calcium and of growth stimulants and including oats and maize will promote recovery. As in rats and dogs, parakeratosis in pigs appears to result from a deficiency of essential fatty acids. Rates of biosynthesis of unsaturated fatty acids are probably insufficient to meet body requirements at times of extremely rapid growth.—A. ACKROYD.

HENDERICKX, H. (1959). In vitro onderzoekingen van de eiwitopbouw in de pensmaag der herkauwers met behulp van S³⁵. [Studies of protein synthesis in the artificial rumen, with the aid of radiosulphur.] — *Vlaams diergeneesk. Tijdschr.* **28**, 80-91. [In Flemish. Summaries in English, French and German.] **3231**

Rumen contents were incubated with labelled ammonium sulphate or urea and the results of nitrogen determinations after 1-7 hours were compared with those obtained by chemical methods.—R.M.

ZELTER, S. Z. & LEROY, F. (1958). Azote uréique et activité bactérienne in vitro au niveau du rumen. I. Effet de l'urée sur la digestion des glucides d'une paille de blé et d'une farine de luzerne déshydratée. II. Essai de détermination in vitro d'un index de rétention bactérienne. [Urea nitrogen and bacterial activity in the rumen. I. Action of urea on digestion in vitro of glucides in wheat straw and lucerne meal. II. Retention of urea nitrogen by bacteria.]—*Ann. Zootech.* **7**, 173-183 & 185-191. **3232**

I. Using an artificial rumen it was shown that adding up to 3% of urea as nitrogen to a low nitrogen diet caused a specific and beneficial improvement in the quality of the feed. Greater quantities of urea inhibited the activities of rumen micro-organisms.

II. The retention of urea nitrogen by bacteria in an artificial rumen was determined. Three substrates were used, one without N, a second poor, and a third rich in N. Up to 5% of urea was added to these substrates which were incubated with rumen liquor for 48 hours at 39°C.—D. S. PAPWORTH.

BADAWY, A. M., CAMPBELL, R. M., CUTHBERTSON, D. P., FELL, B. F. & MACKIE, W. S. (1958). Further studies on the changing composition of the digesta along the alimentary tract of the sheep. I. Total and non-protein nitrogen. — *Brit. J. Nutr.* **12**, 367-383. **3233**

The composition of the digesta of the alimentary tract of 34 sheep was studied with reference to total and non-protein nitrogen. Adrenaline intravenously had no effect on the nitrogen content, but a comparison of the histology of the small intestine mucosa of animals shot in the frontal region against those under pentobarbitone anaesthesia revealed marked shedding of epithelium in the former. This difference could explain the observed rise in nitrogen content.

—D. S. PAPWORTH.

TER-KARAPETYAN, M. A. & OGANDZHANYAN, A. M. (1959). [Soluble amino acids and proteins in the contents of rumen and abomasum of ruminants.] — *C.R. Acad. Sci. U.R.S.S.* **125**, 666-669. [In Russian.] **3234**

By means of chromatography of material obtained from the rumen and abomasum at various times after feeding, the authors described the distribution of nitrogenous compounds between juice and solid matter, the amino-acid composition of rumen juice in comparison with hay extract, and the amino-acid composition of abomasum juice.—R.M.

PACS, I. (1959). Tyúkok zsigeri köszvényének kialakulása fehérjetületetés hatására. [Visceral gout in fowls on high protein diet.] — *Mag. állator. Lapja* **14**, 44-47. [In Hungarian. Summaries in English and Russian.] **3235**

On a state poultry farm a loss of 1,218 out of 3,889 laying hens within 4 months from visceral gout was recorded.

Investigations revealed that during the previous month the protein in the ration was raised from 20% to 40% and was mainly of animal origin. When the protein in the diet of 20 hens was raised weekly by 3% and that of 30 hens was raised by 1.5% weekly up to 32%, diarrhoea occurred in the first group at 28%, the first fatal case at 30%, the second at 32% levels, while in the second group only diarrhoea was observed at the 29% protein level. Careful adjustment of the protein level in the diet of laying hens to their egg yield is suggested as the means of prevention of visceral gout.—A. SEBESTENY.

ALIKAEV, V. A. (1958). [Recent work on mineral nutrition of farm animals.] — *Veter-*

inariya, Moscow **35**, No. 5 pp. 109-117. [In Russian.] **3236**

A review of recent Russian literature on deficiencies of iodine, Co, Cu; excess of Cu, Ni, B, Se, Mo, and Urov disease [*V.B.* **27**, 2463]. Swayback occurred in 10-15% of lambs born in low-lying land around the Caspian Sea. Progressive emaciation with low erythrocyte and haemoglobin values in cattle and sheep was associated with excess copper in the soil (up to 0.07%) in the Bashkir Republic.

Excessive boron content of the soil (0.0018-0.1%) was recorded in low-lying areas of Kazakhstan bordering the Caspian Sea. In sheep in this zone the boron content of organs was up to 35 times greater than normal, and about 14% of sheep were affected with enteritis, nervous disturbances, pneumonia or nephritis. Feed supplements of copper salts were recommended to counteract excess boron.—E. L. URCH.

BOWES, D. N. (1959). Calcificaciones múltiples en los animales domésticos en la Argentina. [Calcification of the cardiovascular, pulmonary and muscular systems in livestock in Argentina.] — *Proc. XVIth Int. vet. Congr., Madrid* **2**, 109. [In Spanish.] **3237**

A disease characterized by calcifications, particularly in the cardiovascular system, lungs, muscular aponeurosis, joints and tendons, is reported from Argentina. It occurs in spring and autumn and affects cattle, particularly dry cows, sheep and possibly horses. Determination of the Mg, P and Ca content of blood samples indicated a mineral imbalance, especially of Mg. Injection and oral administration of Mg salts has given encouraging results.—M.G.G.

GLASER, W. & BRANDT, J. L. (1959). The role of calcium salts in determining the distribution of intravenous Mg^{28} . — *Fed. Proc.* **18**, 53. **3238**

The effects of $CaCl_2$ and calcium gluconate on the distribution of Mg^{28} , administered i/v, were studied. In rats, when equal amounts of $CaCl_2$ and Mg^{28} were administered the plasma disappearance curves were identical and the Mg^{28} uptake was lower than in those receiving Mg^{28} alone. Plasma disappearance curves were identical in dogs receiving Mg^{28} , $CaCl_2$ or calcium gluconate; urinary excretion diminished in dogs receiving treatment in the order mentioned. It is considered that this may be related to a Mg-gluconate complex decreasing urinary excretion of Mg.—T.E.G.R.

EDWARDS, H. M., JR., DUNAHOO, W. S. & FULLER, H. L. (1959). Zinc requirement

studies with practical rations. — *Poult. Sci.* **38**, 436-439. [Authors' summary modified.] **3239**

Experiments with chicks using maize-soya bean meal diets of two calorie and protein levels, under practical conditions showed that zinc supplementation would increase the growth rate, though the response was small. Factors influencing the need for zinc supplements under practical conditions are discussed.

I. CUNNINGHAM, I. J. & HOGAN, K. G. (1959). High molybdenum intake and the thrift of young sheep. — *N.Z. J. agric. Res.* **2**, 134-144. **3240**

II. CUNNINGHAM, I. J., HOGAN, K. G. & LAWSON, B. M. (1959). The effect of sulphate and molybdenum on copper metabolism in cattle. — *Ibid.* 145-152. [Authors' summaries modified.] **3241**

I. Two groups of newly weaned sheep were grazed for 12 months on pasture which for one group provided less than 1 p.p.m. molybdenum, and for the other 8 p.p.m. Copper content was around 7 p.p.m. and inorganic sulphate content averaged 0.4% for the first 7 months and 0.2% for the last 5 months. There was no adverse effect on growth or haematology from the high molybdenum. In conjunction with high Mo, the higher inorganic sulphate prevented Cu storage, but Cu storage did occur when inorganic sulphate was at the lower level. Mo appeared in the blood at the lower but not at the higher level of inorganic sulphate. High Mo in the diet caused accumulation of Mo in bones, kidney and spleen. It is concluded that high Mo in the diet is not itself toxic and that it is harmful to sheep only when there is also present sufficient inorganic sulphate and a low enough dietary copper for Cu depletion and deficiency symptoms to occur.

II. Jersey cattle were fed from yearling stage for 2 years on a ration low in Cu and Mo, and containing 0.1% of inorganic sulphate; supplements of these substances were dosed to different groups.

Additional Mo increased blood and liver Mo and decreased blood and liver Cu. Inorganic sulphate in addition to Mo prevented accumulation of Mo in blood or liver, but did not increase the loss of Cu from blood or liver. It was concluded that any interaction there may be between Mo and sulphate on Cu was provided by the 0.1% inorganic sulphate in the basal ration. It is suggested that the sensitivity of cattle to high Mo is related to the low level of accompanying inorganic sulphate that is necessary to cause of loss of copper.

HALKETT, J. A. E., CHODOS, R. B. & ROSS, J. F. (1959). The labeling of human foods with radioactive iron (Fe^{59}). — *J. Lab. clin. Med.* **53**, 816-823. [Authors' summary modified.] **3242**

Techniques have been presented for the incorporation of radioactive iron into hens' eggs and vegetable greens. The labelled foods may be utilized to evaluate iron absorption.

BAICOIANU, C. (1959). L'influenza della caseina iodata e degli alimenti vegetali sulla produttività degli animali. [Effect of iodinated casein and vegetable foodstuffs on productivity.] — *Zootec. e Vet.* **14**, 85-94. **3243**

Iodinated casein had a favourable effect on semen quantity and quality in sheep and on growth and milk production in cows and sows. Iodinated barley (containing 0.899 mg. iodine per 1,000 g.) stimulated milk production in sows and growth in their young; it was more efficacious, cheaper to produce, and more easily obtained than iodinated casein. The latter may cause abortion. — T.E.G.R.

ROGLER, J. C., PARKER, H. E., ANDREWS, F. N. & CARRICK, C. W. (1959). The effects of an iodine deficiency on embryo development and hatchability. — *Poult. Sci.* **38**, 398-405. [Authors' summary modified.] **3244**

An iodine deficiency in the dam's diet resulted in reduced iodine content of the egg, decreased hatchability, prolongation of hatching time, and retardation in the absorption of the yolk sac into the abdomen.

Embryo development was retarded and embryonic thyroid size was increased by iodine deficiency. The embryonic thyroid exhibited hypertrophy of the epithelial cells, lack of colloid in the follicles, and reduced iodine content.

In iodine deficiency, there appeared to be a positive linear relationship between thyroid size and time of hatch.

The injection of potassium iodide into the air cell of eggs from iodine deficient hens as late as after 20 days of incubation greatly improved hatchability.

FITCH, C. D. & DINNING, J. S. (1959). Phosphate metabolism in nutritional muscular dystrophy and hyperthyroidism. — *Proc. Soc. exp. Biol., N.Y.* **100**, 201-203. **3245**

P³² in dilute hydrochloric acid was injected into rats and rabbits (1) made vitamin E deficient by feeding a purified diet, (2) fed the same diet plus a vitamin E supplement (controls), and (3) into rats with hyperthyroidism induced by

s/c injections of sodium thyroxinate. The specific activities of plasma inorganic phosphate, and of skeletal muscle inorganic phosphate, creatine phosphate and adenosine triphosphate (ATP) were determined. Vitamin E deficiency did not change the specific activity (s.a.) of the plasma inorganic phosphate; hyperthyroidism decreased it. The s.a. of inorganic phosphate in skeletal muscle was increased by vitamin E deficiency. The s.a. of creatine phosphate and ATP was high in vitamin E deficient rabbits and in hyperthyroid rats.—F.E.W.

GUSTAFSSON, B. E. (1959). **Vitamin K deficiency in germfree rats.** — *Ann. N.Y. Acad. Sci.* **78**, 166-173. Discussion: pp. 173-174. [Author's summary modified.] **3246**

On a semi-synthetic diet containing vitamin-free casein and starch and with all the known vitamins except vitamin K₁ added, 42 of 44 germ-free rats developed signs of severe hypoprothrombinaemia; 35 had a tendency to bleed, and 12 died. The disturbances of the blood-clotting mechanism could be alleviated by transferring the animals from the germ-free tanks to more or less heavily contaminated surroundings. After oral administration of vitamin K₁ the prothrombin values below 10% also returned to normal within 5 hours.

DEL LUCCHESI, A. (1959). Considerazioni di un pratico su un caso di acettonemia primaria alimentare. [A case of primary nutritional acetonaemia.] — *Zooprofilassi* **14**, 263-267. **3247**

Acetonaemia in a cow in the ninth month

See also absts. 3340 (nutrition conference); 3341 (sheep nutrition).

DISEASES, GENERAL

ANON. (1958). **Sheep and wool research. C.S.I.R.O. and industry get together.** — *Pastoral Rev.* **68**, 1395-1396. **3250**

C.S.I.R.O. research officers outline current research. The following points are of interest:

As yet the only effective control of foot rot involves the paring of the sheep's feet before applying treatment. Research into less laborious methods is in progress.

The causal organism of mycotic dermatitis is thought to be transmitted from animal to animal, probably from the ewe when cleaning the lamb at birth. One phase of the organism grows under the skin and another passes to the skin surface.

The Mules operation is the only method of permanent effective protection against crutch

of pregnancy was attributed to ketone bodies in ensilage.—T.E.G.R.

AMATRUDA, T. T., JR. & ENGEL, F. L. (1959). **The role of the endocrine glands in ketosis—I. The ketosis of fasting.**—*Yale J. Biol. Med.* **31**, 303-323. [Authors' summary modified.] **3248**

Neither the adrenals nor the hypophysis are essential for the development of fasting ketosis in the rat but both influence the magnitude of the response. With comparable degrees of hypoglycaemia the fasted intact rat develops much greater ketosis than hypophysectomized and/or adrenalectomized rats, indicating that these glands promote ketosis. On the other hand, the decline in ketonaemia during continuation of a fast in intact rats is probably mediated through the adrenal cortex and may be a "permissive" effect of adrenal steroids. The contributory role of a decline in insulin secretion during fasting is also to be considered. The biochemical mechanisms involved in the ketogenic-antiketogenic actions of various hormones are discussed.

GUERRIERI, S. (1959). Il trattamento con ACTH di alcune malattie del ricambio, legate alla gravidanza, al puerperio ed alla lattazione. [Corticotrophin treatment of metabolic diseases associated with pregnancy, parturition and lactation.]—*Clin. vet., Milano* **82**, 94-99. **3249**

Good results were obtained in the treatment of ketosis and of ante- and post-partum paresis, with A.C.T.H., alone or in combination with calcium gluconate and magnesium gluconate.—T.E.G.R.

strike. Arsenic or lime-sulphur dips give complete control of itch mite.

Spraying with copper pentachlorophenol can control the snail intermediate host for liver fluke. Snails can survive 300 days in mud, making complete eradication unlikely.

Intramuscular injections of carbon tetrachloride are being tested against fluke of cattle. Phenothiazine is regarded as the most efficient anthelmintic. The organic phosphorus compounds show promise as anthelmintics but efficient doses are near toxic.

Breeders of Australian Merino sheep have almost doubled the average cut of greasy wool per head in less than 100 years (5.1 lb. in 1881-85 to 9.6 lb. in 1945-55). Selection by measurement of fleece characteristics combined

with eye appraisal could double the rate of breeding improvement. Twinning rate can be raised by selection and the number of surviving lambs is greater amongst the twins.

Wool cuts for the whole of a sheep's life are influenced by the state of nutrition of the sheep during six to eight critical months, including two months pre-natal. The number of follicles which mature and grow wool is dependent on nutrition. Lamb losses and pregnancy toxæmia could be reduced by more careful husbandry of the pregnant ewe.

Research on pastures and grazing trials, aimed at overcoming seasonal variations of pasture productivity, are outlined.—A. G. CULEY.

SOFIEV, B. I. (1959). [**Control of diseases of sheep in Kazakhstan.**]—*Veterinariya, Moscow* 36, No. 5, pp. 10-15. [In Russian.] 3251

Among the 26 million sheep of Kazakhstan, 86·7% of deaths were attributed to gastro-intestinal and pulmonary diseases. Formolized aluminium hydroxide vaccine against sheep pox was widely used (over 10 million sheep were inoculated in 1958). As this vaccine did not prevent the spread of infection, ovination was practised in 590,000 sheep: the virus was inoculated i/d into the ear 15-20 days after vaccination. Heavy losses from coenurosis and echinococcosis were experienced. Sheep scab persisted in 5 of the 16 oblasts (regions). During 1956/58 12 million sheep were inoculated with *Br. abortus* Strain 19 vaccine and this has greatly reduced the number of abortions. But brucellosis is still widespread, and only one third of the sheep population was vaccinated in 1958.

Serum gonadotrophin was administered to 284,000 Karakul ewes in 1958 and is claimed to have increased the number of lambs born by 30-40%.—R.M.

CHU, H. P. (1958). **Differential diagnosis and control of respiratory diseases of poultry.**—*Vet. Rec.* 70, No. 49, Part 2, pp. 1064-1078. Discussion: pp. 1078-1080. 3252

Although all the known poultry respiratory diseases were mentioned, C. dealt in particular with two main categories (a) virus (Newcastle disease, infectious bronchitis, infectious laryngo-tracheitis), (b) pathogenic P.P.L.O. (chronic respiratory disease, Nelson's coccobacillary coryza, turkey sinusitis).

Laboratory aid should be sought early, before secondary invaders obscure the picture, and tentative control measures taken before diagnosis is confirmed. Details were given of laboratory procedure for identification and of pathognomonic symptoms and findings if any.

There is much information and theory on pathogenic and non-pathogenic P.P.L.O. and the disease they may produce alone or jointly with other pathogens.

Many diagrams and tables are included. Measures of prevention and control are suggested. Histories of field outbreaks, their diagnosis and control are given.—IRENE M. DIXON.

ÅSHEIM, Å., NORDSTRÖM, G. & LANNEK, N. (1959). Behandling av fång hos häst med binjurebarksteroider. [**Treatment of laminitis in horses with adrenal steroids.**]—*Nord. VetMed.* 11, 99-109. [In Swedish. Summaries in English and German.] 3253

Four horses with subacute or chronic laminitis were each given i/m inj. of 500 mg. cortisone acetate, daily for 3 days. There was rapid clinical improvement in 3 cases.—R.M.

MAHAFFEY, L. W. & ROSSDALE, P. D. (1959). **A convulsive syndrome in newborn foals resembling pulmonary syndrome in the newborn infant.**—*Lancet* June 13th, 1223-1225. 3254

The syndrome described [see *V.B.* 28, 2970] occurs in other countries besides Gt. Britain where Thoroughbred foals are born indoors under human supervision, and appears to be unknown in Australia where the mares give birth unattended out of doors. The onset may be delayed up to 12 hours after birth. The severe convulsions may last for several days and administration of anticonvulsant drugs may be necessary, and careful nursing is required. The authors described the histology of the lesions. In the lungs of one case they found prominent hyaline structures resembling those in the pulmonary syndrome of the human infant. In the spleen there was depletion of cells in the Malpighian nodes. No lesions were found in the brain. Premature cutting of the umbilical cord would deprive the foal of 1,020-1,500 ml. of blood and possibly cause circulatory disturbance at the time of initial lung expansion. Preliminary experiments in rabbits and puppies revealed similar appearances in the lungs to those in the foals, but further work was needed to confirm that these effects were specific.—F.E.W.

MOROSHKIN, B. F. (1959). [**Preliminary results of an investigation into chronic bovine haematuria.**]—*Veterinariya, Moscow* 36, No. 1 pp. 62-64. [In Russian.] 3255

While feeding experiments indicated the presence of a toxic factor in vegetation from areas where haematuria was endemic, chemical analysis failed to demonstrate any difference

between it and vegetation from areas where the disease did not occur. Autographs of ash from foliage from affected areas and bones from affected animals revealed the presence of ionizing radiation. [There are no details of this work.] M. suggested that chronic haematuria was caused by ingestion of radioactive substances present in plants or water.—R.M.

MONTRONI, L. (1959). Miopatia acuta flogistico-necrotica in bovino. [**An acute myopathy, resembling white muscle disease, in cattle.**]—*Zooprofilassi* 14, 75-76. **3256**

A description, with illustrations, of the gross and microscopic appearances of diffuse white muscle disease in a cow. Intramuscular gelatinous infiltration and oedema were also present.—T.E.G.R.

MARTINI, I. (1959). Nuovi dati sulla eziologia e terapia della cosiddetta "spasticità" del treno posteriore. [**Aetiology and treatment of spastic syndrome in cattle.**]—*Vet. ital.* 10, 140-144. **3257**

A spastic syndrome in adult cattle, as distinct from spastic paresis in calves, is described. The condition, the aetiology of which is obscure, affects one or both hind quarters and is usually brought on by brusque movements. There is spasmodic contraction of the muscles with extension of the affected limb, tremor and pain. In severe cases the muscles of the back and neck are also involved, with depression of the lumbar region and raising of the head. The animal then stands with its four legs fully extended. Spondylitis and disk lesions in the lumbo-sacral region have been observed in affected animals. According to Bouckaert *et al.* [*Vlaams diergeneesk. Tijdschr.* (1958). 27, 173] percussion of the spinous processes causes pain and precipitates an attack. There is progressive loss of condition eventually necessitating slaughter. Mephènesin, according to some workers, gave good results.—T.E.G.R.

GIANELLI, F. & GIOLITTI, G. (1959). Su un caso di xantinosi splenica in una bovina. [**Xanthine deposits in the spleen of a cow.**]—*Arch. Vet. Ital.* 10, 143-148. [Summaries in English, French, German and Spanish.] **3258**

A case account with illustrations.

—T.E.G.R.

PALACIOS REMONDO, F. (1959). La prueba de Woolf en el diagnóstico clínico de las hepatopatías del ganado ovino. [**The Woolf test in liver diseases of sheep.**]—*Proc. XVIth Int. vet. Congr., Madrid* 2, 127-129. **3259**

The Woolf test [see *V.B.* 25, 3342] was

carried out on the blood sera of 137 slaughtered sheep, 81 of which had various liver lesions. The test was negative for all except 6 of the sheep with an apparently normal liver, and for 23 of those with slight damage of the liver. In sheep with moderate to severe damage of the liver the strength of the reaction was often correlated with the degree of damage. The test is recommended for *in vivo* diagnosis of liver damage in sheep.—M.G.G.

PASHOV, T. V. (1959). [**Economic losses from porcine atrophic rhinitis.**]—*Veterinariya, Moscow* 36, No. 2 pp. 24-28. [In Russian.] **3260**

P. attempted to assess losses by reduction in meat production, increased food consumption, increased mortality, reduction in breeding potential and the cost of control measures. The total average loss was put at 300 roubles (about £15) a pig.—R.M.

WOLFF, A. H. (1959). Nuclear energy and veterinary science. — *Proc. XVIth Int. vet. Congr., Madrid* 1, 1-20. [Summary in Spanish. Author's summary modified.] **3261**

The greatest radiation exposure of farm animals from nuclear energy is likely to result from grazing contaminated areas. The amounts of radio-iodine and radiostrontium in animal tissues may be used to evaluate the magnitude of internal radiation. It has been concluded that current internal radiation was not hazardous to farm animals. Radioactive fall-out tended to be greatest in the North Temperate Zone, particularly in the U.S.A. In many countries, including the U.S.A., milk was probably the most important source to man of radionuclides produced by nuclear explosions, and strontium-90 and iodine-131 were the most dangerous radionuclides secreted in milk.

Although the amounts of strontium-90 as well as other radionuclides to which man is exposed were well below the general maximum permissible levels currently recommended, there were gaps in our knowledge concerning the delayed effects of radiation, particularly internal radiation, and the problem merited extensive study. W. also discussed the preservation of milk and dairy products by means of ionizing radiation.

SHIVELY, J. N., ANDREWS, H. L., MILLER, H. P., WARNER, A. R., JR. & McNULTY, W. P. (1959). Responses of swine to high doses of radiation. — *Proc. Soc. exp. Biol., N.Y.* 101, 74-77. **3262**

A report of the behaviour, clinical findings and haematology in 26 pigs (3-4 months old)

exposed to total body high-intensity irradiation with X-rays at a constant dose rate of 150 r/min., using apparatus which allowed exposure of 3 pigs at a time, behaviour being observed by closed-circuit television. P.M. and histological findings will be reported elsewhere. The first sign was restlessness at 2,000 to 2,500 r; at 3,500 to 4,000 r there was acute distress (salivation, mastication, retching and severe emesis); diarrhoea occurred at about 15,000 r and persisted. All other symptoms ceased between 10,000 and 20,000 r, the pigs becoming calm and then depressed. After 20,000 r they still responded to auditory and visual stimuli, but depression increased; by 30,000 r all pigs became prostrate, with no response to any stimuli. Transient c.n.s. manifestations (convulsions, loss of equilibrium) occurred at 39,000 r. After total doses of 21,350 r and below, from 1 to 3 hours after exposure there was a period of "well-being" lasting 10 to 48 hours, followed by deterioration of condition and death within 24 hours. Pigs given 24,000 to 40,000 r were incapacitated. After the highest dose they remained prostrate after exposure, with transient

seizures, and died during violent convulsions. Tables show the survival times by dose group (the response of pigs resembling that of the g. pig and mouse, rather than that of the rat and hamster), the circulating leucocyte response and the blood platelet response at various times after exposure. Details are given of temp., pulse and respiration rates and of the haematology.

—F.E.W.

VOS, O., WENSINCK, F. & VAN BEKKUM, D. W. (1959). **Lesions of the tongue in irradiated mice.**—*Radiation Res.* **10**, 339-346. [Authors' summary modified.] **3263**

Examination of nearly 700 mice that died after total-body exposure to 675 and 750 r revealed macroscopic lesions of the tongue in 23%. Microscopic lesions were much more frequent. The lesions consisted of a heavily infected necrotic mass. Cellular reaction was absent. The possibility that the lesions are the portal of entry for micro-organisms in the development of the bacteraemia associated with the bone marrow syndrome was discussed.

See also absts. 3235 (visceral gout); 3320 (pityriasis in pigs); 3325 (losses in Dutch cows).

POISONS AND POISONING

FITZHUGH, O. G., BOURKE, A. R., NELSON, A. A. & FRAWLEY, T. P. (1958). **Chronic oral toxicities of four stearic acid emulsifiers.**—*Toxicology & appl. Pharm.* **1**, 315-331. **3264**

The four emulsifiers "Span 60", "Myr 45", "Myr 52" and "Tween 60" were added to the food of rats in concentrations ranging from 2 to 25% for 2 years, and to dogs at 5% conc. for 19-20 months. Deleterious effects were confined to concentrations of 10% and above. The lesions caused differed with each agent. "Myr 45" produced bladder calculi in 27 of 87 rats fed a 25% conc., and half of these rats developed bladder tumours.—R.M.

WILLIAMS, M. W., FUYAT, H. N. & FITZHUGH, O. G. (1959). **The subacute toxicity of four organic phosphates to dogs.**—*Toxicol. appl. Pharm.* **1**, 1-7. **3265**

Determinations were made of cholinesterase in plasma and erythrocytes of dogs after inclusion in the diet of 5-500 p.p.m. of Dipterex, chlorthion, methyl-parathion and diazinon for 3 months. Dipterex caused inhibition of cholinesterase at 500 p.p.m. but not at 50 p.p.m.; chlorthion and methyl-parathion did not produce inhibition at less than 15 and 50 p.p.m. respectively; cholinesterase depression caused

by diazinon was slight at 0.75 and severe at 75 p.p.m.—R.M.

RESSANG, A. A., TITUS, I., SOETOPO, R., ANDAR & SOEDARMO, D. (1958). **Aldrin, dieldrin and endrin intoxication in cats.**—*Commun. vet., Bogor* **2**, 71-88. [In English. Conclusions in Indonesian and German.] **3266**

Experimental toxicity in cats, of the above compounds, was in descending order: endrin, aldrin, dieldrin, orally and by inhalation, though cutaneously aldrin was more toxic than endrin. Numerous tables of blood cell counts etc. are appended. Symptoms are similar to feline infectious gastro-enteritis (but without fever), also possibly to strychnine poisoning. Gross pathological findings are hardly diagnostic. Microscopic changes, not pathognomonic, include degeneration of ganglion cells and engorgement of capillaries in all organs and brain membranes. In acute poisoning there were often no obvious lesions.

Newly painted houses where dieldrin is incorporated in the paint are a practical hazard to cats. Diagnosis is on history, symptoms, and tests on urine, liver, kidneys with methanol.

—IRENE M. DIXON.

WAHID, A. (1958). Aldrin toxicity in cattle.—*Agric. Pakist.* 9, 14-16. 3267

Experiments on 5 calves indicated that the smallest toxic dose was 0.5 ml. of a soln. of aldrin of unstated concentration. When sugar cane was sprayed with aldrin for locust control at the rate of 320 ml. per acre, an animal eating 25 lb. of sprayed sugar cane in a day could ingest from 0.7 to 1.1 ml. of aldrin soln.—R.M.

BOHOSIEWICZ, M. & SZWABOWICZ, A. (1959). Zatrucia zwierząt chemikaliami typu 2,4-D i DNOC (do niszczenia chwastów, owadów i do impregnacji drewna). [Poisoning in animals with weed-killers, parasiticides and wood preservatives, dinitrophenol and dinitro-ortho-cresol type.] — *Med. Wet., Warszawa* 15, 107-109. [In Polish. Summaries in English and Russian.] 3268

Following the introduction of hormonal weed-killers, insecticides and wood preservatives of the dinitrophenol and dinitro-ortho-cresol type, a number of instances of poisoning of foals, dogs, young cattle, poultry (and bees), have been recorded. The clinical symptoms were profuse salivation, vomiting, thirst, sweating, accelerated and later slowed respiration, tremors and convulsions followed by death. The course was usually acute or peracute. P.M. findings included rapid onset of rigor, cyanosis and sometimes yellow discoloration of the lips, stomach contents and gastric and intestinal mucosae. The authors suggest that in suspected cases stomach contents, liver, and specimens of any yellow coloured organs (and in the case of bees 100-200 of the dead insects) should be sent for laboratory examination.—M. GITTER.

JAMIESON, N. D. (1959). Nitrate reduction in the rumen of the grazing sheep. — *N.Z. J. agric. Res.* 2, 96-106. [Author's summary modified.] 3269

There were great fluctuations in the concentration of nitrate in plants. Nitrate and comparatively small amounts of nitrite have been detected in the rumen contents of grazing sheep.

The effect of dosing sheep with 20-25 g. potassium nitrate was studied. The rumen was capable of handling comparatively large amounts of nitrate under normal circumstances without noticeable ill-effect. The sheep exhibited a sustained but fluctuating methaemoglobinaemia with peak values of about 35% conversion of total haemoglobin to methaemoglobin.

DOBAL, A. (1959). Investigations and observations on pigs concerning methemoglobinaemia.—*Proc. XVIIth Int. vet. Congr., Madrid* 2, 251-252. 3270

In Hungary, in the years 1954-56, methaemoglobinaemia was found P.M. in 137 pigs, 3 cattle and one dog. The pig swill was prepared with well water containing 840-1,350 mg./litre of nitrate, and was mixed 6-12 hours before feeding. Bacteria were isolated from the well water which were capable of reducing nitrate to nitrite. A pig fed swill containing potassium nitrate to which a culture of these bacteria had been added developed typical symptoms and 58.6% of its haemoglobin was transformed to methaemoglobin.—M.G.G.

RANBY, P. D. & RAMSAY, W. R. (1959). A clinical note on the occurrence of oestrogen toxicity in pigs.—*Aust. vet. J.* 35, 90-92. 3271

Unthriftiness and signs of oestrus were noted in young pigs which had been fed boiled capons' heads for six weeks. Hexoestrol had been used for caponization and clinical signs in the pigs abated soon after feeding of the capons' heads ceased.—R. G. WALES.

LUSTIG, M. (1958). [Greek hay straw—a possible toxic factor for cattle.]—*Refuah vet.* 15, 171-172. In Hebrew. [Summary in English.] p. 192. 3272

Chronic lameness in 24 calves was manifested by abduction of the limbs, extensor weakness, dropped fetlocks, and overgrown toes. The animals walked with a stumbling gait and fell if made to run. Lameness started in the hind limbs and spread to the fore limbs within 4-6 weeks. On all affected farms the cattle had each been given 2-3 kg. daily of "Greek hay" straw, which is stated to be a legume [? fenugreek], for 2 months before the onset of lameness. The condition did not respond to tocopherol therapy.—R.M.

ZELJKO, M. & KARLOVIĆ, M. (1959). Trovanje svinja kokotcem (*Melilotus officinalis* Desrousseaux). [Sweet clover (*Melilotus officinalis*) poisoning in pigs.]—*Vet. Glasn.* 13, 61-63. [In Croat. Summary in English.] 3273

Five of twelve sows died after ingestion of sweet clover (*Melilotus officinalis*); the remainder recovered after treatment with vitamin K.

—E.G.

SLEZIC, M. (1959). Vergiftungen der Haustiere durch die Pflanzengattung Gemsekraut-Doronicum. [Poisoning of livestock by plants of the genus *Doronicum*.] — *Proc. XVIIth Int. vet. Congr., Madrid* 2, 97-98. 3274

D. caucasicum and *D. austriacum* were fed to cattle, sheep, horses and fowls. The minimum lethal dose of *D. caucasicum* for cattle was 0.5 g. of dry leaves per kg. body wt., for horses 0.75 g.

and for sheep 0.1 g. Cattle died 12-38 hours after eating, horses 18-40 and sheep 12-16. *D. austriacum* was less toxic and death took place 6-10 hours later. Fowls were unaffected even when given ten times the lethal dose for cattle. Symptoms were predominantly cerebral. Sheep developed tonic, clonic spasms, whereas cattle and horses became depressed, somnolent and comatose. P.M. examination revealed enlargement and degeneration of the liver and kidneys.

—M.G.G.

GANCARZ, B. & JANOWSKI, W. (1959). Przy-padek masowego zatrucia bydła lucerną. [Mass lucerne poisoning in cattle.] — *Med. Wet., Warszawa* **15**, 105-106. [In Polish.] **3275**

An account of an outbreak of photosensitization affecting 16 of 47 cows and heifers and 1 of 7 calves after 3 days' grazing on lucerne during cloudless weather. All affected animals had purulent conjunctivitis and keratitis, and in 3 cows there was anorexia and marked pruritus starting at the udder and spreading over the body. Inflammatory changes in the non-pigmented parts of the skin were followed by scab formation and superficial suppuration. Proteinuria and glycosuria were also noted.

—M. GITTER.

McFARLANE, D., EVANS, J. V. & REID, C. S. W. (1959). Photosensitivity diseases in New Zealand. XIV. The pathogenesis of facial eczema. — *N.Z. J. agric. Res.* **2**, 194-200. [Authors' summary modified.] **3276**

The essential pathology of facial eczema in the sheep is an acute cholangitis which in severe, acute, or chronic cases proceeds to obliteration of the duct by fibrous tissue. This is immediately followed by ductule hyperplasia, canalicular infarction and hepatocellular necrosis and later by cicatrization of those areas drained by obliterated bile ducts and compensatory hyperplasia of the non-affected portions of the liver.

MAGNUS, I. A., PORTER, A. D. & RIMINGTON, C. (1959). The action spectrum for skin lesions in porphyria cutanea tarda. — *Lancet* May 2nd, 912-915. [Authors' summary modified.] **3277**

A patient with porphyria cutanea tarda showed abnormal reactions in the skin to light of wavebands which corresponded well to the absorption spectrum of porphyrins. Erythema was observed also as a result of exposures to wavebands in the visible spectrum from 410 to 600 m μ ; these responses may correspond to the

lesser peaks of absorption shown by porphyrins when viewed in the visible spectrum. On the other hand, the skin reactions of the patient to ultra-violet light in the normal sunburn region (around 300m μ) were normal.

The evidence strongly suggests that in this case photosensitivity was initiated by porphyrins in the skin.

MUNDAY, B. L. (1959). Antivenene in suspected case of snake bite in the cat. — *Aust. vet. J.* **35**, 44. **3278**

Based on circumstantial evidence and neurological symptoms exhibited by a cat, a provisional diagnosis of tiger snake bite was made.

Recovery was rapid after intracardial injection of 1,500 units of tiger snake antivenene, although 19 hours had elapsed before treatment.

—A. CULEY.

BOYD, E. M. (1959). The acute oral toxicity of a mixture of acetylsalicylic acid, phenacetin, and caffeine. — *Toxicology & appl. Pharm.* **1**, 258-266. **3279**

The average lethal oral dose of compound codein tablets (B.P.) for rats was 1.42 g./kg. body wt. Clinical signs of intoxication included restlessness, weakness, ataxia, excitement, anorexia and hypothermia. Half of the rats died from either convulsions, hypothermia and respiratory failure, or cardiovascular collapse. The remaining half had a rapidly rising terminal fever. Lesions included severe gastro-enteritis, pulmonary venous thrombosis, hepatitis and nephritis. In general the toxicity of the mixture was a summation of the toxicity of each ingredient. —R.M.

FIELDER, F. G. *et al.* (1959). A study of the subacute toxicity of prednisolone, methylprednisolone and triamcinolone in dogs. — *Toxicology & appl. Pharm.* **1**, 305-314. **3280**

Prednisolone and methylprednisolone were administered orally to dogs for 6 weeks in daily doses of 2.5 or 5 mg./kg. body wt. without apparent harmful effect. When triamcinolone was similarly administered at the same doses 5 of 8 dogs died. Results of haematological and pathological examinations were given. —R.M.

ROSS, J. G., ARMOUR, J. & LEE, R. P. (1959). The effect of phenothiazine on serum albumen levels and erythrocyte values of Nigerian zebu cattle. — *Vet. Rec.* **71**, 477-480. [Authors' summary modified.] **3281**

The effect of therapeutic and massive doses

of phenothiazine on serum albumin and erythrocyte values in cattle is reported. The toxicity appeared to be enhanced by poor condition or

low levels of nutrition. Toxic doses lowered the serum albumin level. The mode of action of the drug is discussed.

See also abst. 3110 (toxic fungi).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

STABLEFORTH, A. W. (1959). **Standardization of biological products.** — *Proc. XVIth Int. vet. Congr., Madrid 1*, 291-299. [Summaries in French, German and Spanish. Author's summary modified.] **3282**

As suggested by the XVth International Veterinary Congress, additional International Standards have since been established for swine erysipelas serum (anti-N) and *Cl. welchii* Type B and D antitoxins.

Other standards established since 1953 include those for P.P.D. avian tuberculin, Q fever serum, rabies serum, phenoxymethylpenicillin, dihydrostreptomycin, bacitracin, tetracycline, chlortetracycline, oxytetracycline, erythromycin and polymyxin B. A list of present standards was given.

A standard for swine erysipelas vaccine has also been subjected to collaborative international assay and will soon be established.

Reference preparations of type specific anti-leptospira sera are being prepared, and one or more antisera for tickborne encephalitides have been proposed.

New standards for the following seem worthy of consideration: antitoxins against *Cl. oedematiens alpha*, *Cl. botulinum* C and D; swine fever antiserum; vaccines against anthrax (spore or "Porton" type); *Cl. welchii* Types B and D, *Cl. botulinum* C and D, *Cl. chauvoei*, *Cl. septicum*, swine fever, canine distemper and Newcastle disease.

The existing International Standards have been used as a basis for diagnostic criteria or minimum requirements for prevention or therapy by O.I.E. and the various expert committees of W.H.O. and F.A.O. Extension of these activities seemed desirable.

- I. REID, C. S. W. & HUTCHINGS, H. E. (1959). **Effects of ingestion of paraffins by ruminants. V. Blood plasma prothrombin times of cows drenched with heavy liquid paraffin.**—*N.Z. J. agric. Res.* **2**, 26-34. **3283**
- II. MCGILLIVRAY, W. A., McDOWALL, F. H. & REID, C. S. W. (1959). **Effects of ingestion of paraffins by ruminants. VI. Ingestion of heavy liquid paraffin by cows near parturition in relation to milk yield and composition and**

to fat-soluble vitamin content of the butterfat during the early stages of lactation. — *Ibid.* **35-46.** [Authors' summaries modified.] **3284**

I. A dose of 75 ml. of heavy liquid paraffin (B.P.) given twice daily for 26 days to 3 cows in the declining stages of lactation, had no detectable effect on the plasma prothrombin times.

The same dose of oil given to 7 cows in late pregnancy, or late pregnancy and the first two weeks after calving, was also without effect.

The average prothrombin time in lactating cows was 23 sec. (48 samples) and in pregnant cows, 21.6 sec. (415 samples).

II. Cows were treated before and after parturition with 150 ml. of heavy liquid paraffin daily, a dose rate effective for the control of bloat. The treatment had no effect on milk and fat yields. It did not cause any change in the levels of carotene, xanthophyll, vitamin A, and tocopherol in the butter-fat in the first milk drawn after parturition but it accelerated the post-parturition fall in carotene, vitamin A ester and tocopherol, and (to a lesser degree) xanthophyll. It did not affect the vitamin A alcohol content of butter-fat.

Because of the pale colour of early post-colostrum butter-fat, the treatment could be expected to lower the depth of colour of spring-made butter.

Treatment with paraffin caused marked decrease in the levels of carotene and tocopherol in the blood.

There was no evidence of any effect of paraffin treatment on the health of the cows before, during, or after parturition, but the reduced vitamin potency of the colostrum made it unsuitable for feeding to calves.

- CARLSON, C. W. (1958). **Tranquilizer drugs for poultry?**—*S. Dak. Fm Home Res.* **9**, No. 4 pp. 21-23. **3285**

In trials with reserpine added to the diet of growing chickens, growth rate was slightly reduced rather than increased and the drug may even possibly have been responsible for a higher than normal mortality. Benactyzine in a few trials showed to some slight advantage, in others to disadvantage.

In trials on similar lines with antibiotics consistently good growth response was obtained only with a combination of penicillin plus streptomycin, and with oleandomycin alone.

—IRENE M. DIXON.

SMYTH, J. R., JR., ANDERSON, D. L. & FOX, T. W. (1959). **The effects of furazolidone and vitamin E on turkey reproduction.**—*Poult. Sci.* **38**, 288-296. **3286**

Under some experimental conditions furazolidone adversely affected testis function and embryonic development in the turkey. When the drug was given continuously in the food at a concentration of 0.022% sexual maturity was indefinitely delayed in 38.5% of males. Both fertility and hatchability of eggs were affected. While d-alpha tocopheryl acetate improved hatchability when added to the basal ration, the increase was reduced in the presence of 0.011% furazolidone. With a low vitamin E diet, it is stated, there was some evidence that furazolidone improved hatchability.

—S. BRIAN KENDALL.

ANDERSON, R. L., JR., FERGUSON, A. B., JR. & BRAUDE, A. I. (1959). **Bacteriostatic effect of tetracycline in bone.**—*Antibiot. & Chemother.* **9**, 109-110. [Summary in Spanish. p. 127.] **3287**

Following an i/m inj. of 250 mg. tetracycline, the drug was detected in the long bones of rabbits 24 and 44 hours later. The drug was present in bone 72 but not 96 hours after the last of six 8-hourly injections.—R.M.

WRIGHT, J. G. (1958). **Anaesthesia and narcosis in the horse.**—*Vet. Rec.* **70**, 329-336. **3288**

A historical note on anaesthetics in horses is given and the agents in use since the introduction of anaesthesia in veterinary practice are reviewed together with results of personal observations. Chloral hydrate by slow i/v inj., is considered the best method for deep narcosis and light general anaesthesia; ultra-short- or short-acting barbiturates are preferred to inhalation anaesthetics for induction of anaesthesia and its maintenance for prolonged operations. Casting before administration is advocated on grounds of accuracy of injection and assessment of narcosis. The main disadvantages of the method are that great technical care is necessary and recovery rate is relatively slow. Chlorprom-

azine hydrochloride is not considered to be established in equine surgery and its use is fraught with danger to the animal. The disadvantages of muscle-paralysing agents are enumerated and the introduction of these agents into equine surgery is viewed with misgiving.—T.E.G.R.

MASSARËGIN, A. G. (1959). **[Pre-slaughter anaesthesia of cattle with a mixture of nitrous oxide and carbon dioxide.]**—*Proc. Lenin Acad. agric. Sci.* **24**, No. 1 pp. 39-43. [In Russian.] **3289**

Satisfactory mixtures were 10% N₂O, 60% CO₂ and 30% air, or 60-75% CO₂ and air. Pigs were anaesthetized (by use of a face mask) in 3 min. and rabbits in 2 min. Anaesthesia did not affect blood clotting or meat quality.—R.M.

MURDOCH, W. R. & WILL, G. (1959). **Synovial fluid changes in intra-articular therapy. Effect of prednisolone trimethylacetate.**—*Brit. med. J.* May 16th, 1271-1274. [Authors' summary.] **3290**

A detailed analysis is made of the serial changes in total and differential cell counts, total protein and electrophoretic pattern, viscosity, and mucin content of the synovial fluid of 40 joints (30 rheumatoid arthritis, 6 osteoarthritis, and 4 hydrarthrosis) treated with prednisolone trimethylacetate, a new compound for intra-articular injection. The findings suggest a local action superior to that of the other steroid compounds used.

LEWIS, J. M., MANSFIELD, M. E., GARRIGUS, U. S. & WEBB, R. J. (1959). **Antibiotic injections and implants in day-old lambs.**—*J. Anim. Sci.* **18**, 629-633. [Authors' summary modified.] **3291**

The effect of injecting oxytetracycline HCl in oil and of implanting bacitracin, procaine penicillin G, chlortetracycline calcium, and oxytetracycline HCl on the growth rate and death loss of day-old lambs was studied. Various dosage levels were administered s/c on the side of the neck. Twin and single lambs were used, each treated lamb having a paired control.

No significant differences between treated and untreated single or twin lambs were found in 10-day weights, death losses, or subsequent weights. No damaging effects were observed in the areas of injection or implantation.

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

LEE, D. H. K. (1959). **The status of animal climatology with special reference to hot conditions.**—*Anim. Breed. Abstr.* **27**, 1-14. **3292**

A discussion of past and current research on heat tolerance and its practical application to farm animals. [78 references.]—R.M.

NIEBROJ, T. (1958). **Mast cells.**—*Nature, Lond.* **181**, 991. **3293**

In white mice receiving any of 3 different cobalt compounds by i/p injection, either as a single dose of 100 mg. cobalt/kg. body wt. or daily doses of 5 mg. cobalt/kg. for 3 weeks, changes occurred in the staining reaction of the granules of the mast cells in the skin, which led to their disruption and degeneration by clasmotosis (phagocytosis). Mitosis of the cells was stimulated.

Observations carried out at 3-hourly intervals for 27 hours on the skin of normal white mice revealed a diurnal variation of the mast cell activity. Cytoplasmic granules increased in metachromatic staining reaction from early morning, reaching a maximum at midnight. Phagocytosis of the cells was minimal by day and increased during the night.—W. E. PARISH.

CARLISLE, D. B. & JENKIN, P. M. (1959). **Terminology of hormones.**—*Nature, Lond.* **183**, 336-337. **3294**

A precise terminology is suggested for the four types of animal hormones which might remove some of the confusion surrounding their function. (1) "Metabolic" hormones which stimulate or inhibit metabolic processes and (2) "Morphogenetic" hormones which promote growth and differentiation. These two groups would inevitably overlap. (3) "Kinetic" hormones would describe those which control rapid and repeatable actions of effector organs and (4) "Endocrinokinetic" for those hormones which stimulate the secretion of another hormone from an endocrine gland.—JOYCE E. HAMMANT.

KUMAR, S., LAKSHMANAN, S. & SHAW, J. C. (1959). **β -Hydroxybutyrate and acetate metabolism of the perfused bovine udder.**—*J. biol. Chem.* **234**, 754-757. [Authors' summary modified.] **3295**

The carboxyl carbon of C^{14} -labelled β -hydroxybutyrate was incorporated appreciably into milk fat and casein by the perfused lactating bovine udder. Negligible incorporation was found in lactose.

The uptake of β -hydroxybutyrate from the blood by the perfused lactating bovine udder

was depressed by the presence of acetate; acetate was taken up preferentially.

HOORENS, J. (1959). **Het bloedbeeld bij pasgeboren en binnenopgefokte biggen. [Blood picture of new-born and housed piglets.]**—*Vlaams diergeneesk. Tijdschr.* **28**, 37-53. [In Flemish. Summaries in English, French and German.] **3296**

The development of hypochromic anaemia was studied in 200 piglets reared in buildings having concrete floors. Weaning of piglets at the age of 2-3 weeks was inadvisable under these conditions, because the anaemia was then at its worst.—R.M.

ANDRESEN, E., LARSEN, B. & NEIMANN-SØRENSEN, A. (1959). **Blood groups of domestic animals.**—*Proc. XVIth Int. vet. Congr., Madrid* **1**, 71-89. [Summaries in French, German and Spanish. Authors' summary modified.] **3297**

A general outline of present knowledge of blood groups in cattle, pig, fowl, sheep, horse and dog was presented. Special emphasis was placed on the Danish investigations on blood groups of cattle and pigs.

SAPIRSTEIN, L. A. & HARTMAN, F. A. (1959). **Cardiac output and its distribution in the chicken.**—*Amer. J. Physiol.* **196**, 751-752. **3298**

Cardiac output of hens, measured by the dilution of radioactive rubidium, was calculated as 218 ml./kg./min. Coronary flow accounted for 4.9% of the total output, renal flow for 15.2%, and splanchnic flow for 17.4%.—R.M.

YOFFEY, J. M. (1959). **The lymphocyte problem.**—*Nature, Lond.* **183**, 76-78. **3299**

Y. discussed briefly the present state of information regarding lymphocytes. The characteristic type of movement is described together with an account of the lymphoid tissues found in mammals compared with that of fishes, amphibians and reptiles. In the last three lymphoid tissue is associated with myeloid tissue. Lymphocyte formation is stated as frequently occurring in the thymus and the capacity of the growing cells for uptake of radioactive deoxyribonucleic acid precursors has been used to estimate their rate of formation. Although the fate of the lymphocyte is obscure it is considered that as it produces a variety of antibody globulins, it could possibly give rise to haemoglobin and hence be a primitive multi-potential cell.

However, it has been shown that transfused lymphocytes are unable to colonize bone marrow destroyed by radiation although transfused marrow leads to regeneration of the lymphoid tissue.—JOYCE E. HAMMANT.

HUCKABEE, W., METCALFE, J., PRYSTOWSKY, H., HELLEGERS, A., MESCHIA, G. & BARRON, D. (1959). **Uterine blood flow and metabolism in pregnant sheep at high altitude.**—*Fed. Proc.* **18**, 72. **3300**

In pregnant sheep kept at high altitude from birth, uterine blood flow was moderately but significantly increased by hypoxaemia of altitude and was not affected by the stage of pregnancy. Consumption of tissue O_2 was the same at high altitude as at sea level; it rose steadily with pregnancy and fell slightly towards the end. CO_2 production followed the same trend. In all animals the RQ of the foetus exceeded that of the whole pregnant uterus during the first 90 days of pregnancy (period of rapid placental growth); thereafter (period of rapid foetal growth), the reverse occurred.

—T.E.G.R.

KLAUS, H. (1958). Untersuchungen über den Bilirubinstoffwechsel bei Pferden, Schafen, Kälbern und Kaninchen. [**Bilirubin metabolism in horses, sheep, calves and rabbits.**]—*Arch. exp. VetMed.* **12**, 725-740. **3301**

K. determined total bilirubin and "direct" bilirubin in serum from about 40 healthy animals of each species. The results are presented with reference to jaundice in new-born calves and foals, and to the influence of time of day and feeding on the values obtained.—R.M.

BELL, F. R. & WILLIAMS, H. L. (1959). **Threshold values for taste in monozygotic twin calves.**—*Nature, Lond.* **183**, 345-346. **3302**

The individuals of 18 pairs were kept under similar conditions but widely separated and attended by different personnel. Substances used to test the animals' sensitivity to sweet, sour, salt and bitter tastes were offered in solutions of varying dilutions together with fresh water. The rejection threshold was taken at the lowest concentration where the test solution formed 20% of the total fluid intake. The tests extended for two 9-hour periods over consecutive days. The results showed much closer similarity between individuals of a pair than between unrelated animals. It was concluded that taste discrimination is genetical in origin and that

monozygotic twins would be the experimental animals of choice among the large ungulates.

—JOYCE E. HAMMANT.

KAY, R. N. B. (1959). **Rumination in sheep caused by injection of adrenaline.**—*Nature, Lond.* **183**, 552-553. **3303**

A balloon, connected to a water manometer, was placed in the rumen of 6 trained sheep, so that contractions of the reticulum could be recorded. One parotid duct was also cannulated, to measure the flow of saliva. Adrenaline was injected into a jugular vein. Rapid inj. of 0.2-0.7 $\mu\text{g./kg.}$ body wt. caused increased parotid secretion and rumination with triphasic contractions of lower amplitude than previous contractions. The latency period varied from 24-137 sec. Noradrenaline caused rumination in 3 of 4 sheep; saline had no effect. As adrenaline has an inhibitory effect on the stomach of conscious sheep it was suggested that receptors of the forestomach might be sensitized by the application of adrenaline.—JOYCE E. HAMMANT.

TALANTI, S. (1959). **Studies on the lungs in the pig.**—*Anat. Anz.* **106**, 68-75. [In English. Author's summary modified.] **3304**

The lungs of 30 pigs were studied macroscopically. The bronchial tree, and the lobar and the broncho-pulmonary segmental division were described in detail. The left lung was composed of three lobes, which are divided into 10 segments; the right lung consisted of four lobes, which are subdivided into 14 segments.

MCINDOE, W. M. (1959). **A lipophosphoprotein complex in hen plasma associated with yolk production.**—*Biochem. J.* **72**, 153-159. [Author's summary modified.] **3305**

A lipophosphoprotein complex (PLP) of constant composition can be precipitated from laying-hen plasma by dilution with water, and is not detectable in the plasma of non-laying hens or of cocks.

PLP accounts for a large but variable proportion of whole plasma lipids, and for about 35% of the plasma protein phosphorus and 10% of the protein nitrogen.

PLP appears in hen plasma about 7 days before the first ovulation and disappears within a few days when hens go off lay. The plasma concentration and composition of PLP during these periods have been examined.

It is possible that PLP transports most of the plasma lipid and almost half the plasma phospho-protein included in egg yolk.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

ANDERSEN, C. P. & JØRGENSEN, K. L. (1959). Undersøgelser over forekomst af penicillin og et af *Str. saccharolactis* produceret antibiotikum i den på mejerierne modtagne mælk. [**Occurrence of penicillin and an antibiotic produced by *Str. saccharolactis* in milk delivered to dairies.**] — *Nord. VetMed.* 11, 316-330. [In Danish. Summaries in English and German. English summary modified.] **3306**

In pure culture *Str. saccharolactis* produced an antibiotic substance which on agar-cup plates exhibited a 5 mm. inhibition zone corresponding to 0.1-0.2 i.u. penicillin. In curdling experiments employing milk plus a 25% *saccharolactis* culture the substance caused an 11-12 hours retardation of the curdling as compared to the control milk. The substance was not influenced by heating to 63°C. for 30 min., but heating to 85° C. caused a decrease in the inhibition. In the differentiation between penicillin and *saccharolactis* antibiotics penicillinase neutralization was employed.

SHAHANI, K. M. (1959). Visual detection of antibiotics in milk by means of a dye. In "Antibiotics annual 1958-1959" pp. 883-889. [New York: Medical Encyclopedia Inc.] **3307**

A green-turquoise dye, given with intramammary penicillin infusions in cows, colours the milk yield as long as the penicillin is

secreted in the milk. A complex of antibiotic and dye may be formed. The dye appears rather longer when used in oil than when in aqueous infusions, and neither dye nor antibiotic will diffuse from one quarter to another. There is no adverse effect upon milk or udder.

—F. R. PAULSEN.

PIETRO, T. (1959). Contributo al miglioramento dei servizi di trasporto urbano delle carni macellate. [**Improved hygienic conditions in vehicles used for the conveyance of butcher's meat.**] — *Progr. vet., Torino* 14, 102-106. **3308**

Two types of zinc lined meat vans used in Italy are described. The main features are that the meat is loaded direct from overhead rails through an opening in the roof and is unloaded from the sides, from which it is easily reached—this obviates the necessity for persons stepping into the van. The viscera are carried in separate compartments; there are facilities for hanging calf, pig, sheep and lamb carcasses and adequate ventilation is provided.—T.E.G.R.

DOUGLAS, G. W. (1959). Rabbit control by aerial baiting: effective new method.—*J. Dep. Agric. Vict.* 57, 147-158. **3309**

Trials were carried out with carrot bait and 1080 (sodium fluoroacetate). Five free feeds at intervals of 5-7 days preceded the poisoned bait. Kills were estimated to exceed 90%. Details of costs and organization are given.

—R. I. SOMMERVILLE.

See also absts. 3062 (abattoir effluent); 3198 (radiation sterilization of meat); 3289 (narcosis for slaughter).

REPRODUCTION AND REPRODUCTIVE DISORDERS

HAAG, F. M. (1959). Determination of the approximate sperm concentration of horse semen with the aid of a spectrophotometer.—*J. Amer. vet. med. Ass.* 134, 314-316. [Author's summary modified.] **3310**

The optical density of 66 samples of horse semen, diluted 1:50 with normal saline containing formalin and measured with a spectrophotometer, was directly related to the concentration of spermatozoa. Differences in viscosity in the undiluted samples did not affect the determination of density provided certain limitations were recognized.

RIKMENSPOEL, R. (1957). Photoelectric and cinematographic measurements of the "motility" of bull sperm cells. — *Thesis, Utrecht* pp. 94. [In English. Summary in Dutch.] **3311**

This thesis gives full details of work previously reported in brief [*V.B.* 27, 608].—R.M.

SCHEEL-THOMSEN, A. (1959). Ovariectomies på hund. [**Transplantation of ovaries in the bitch.**] — *Nord. VetMed.* 11, 162-182. [In Danish. Summaries in English, French and German.] **3312**

Transplantation was successfully performed in 3 of 7 bitches using a technique modified from that described by Whitney [*V.B.* 21, 243].

—R.M.

GRACE, O. D., UNDERDAHL, N. & YOUNG, G. A. (1959). Procurement of lambs by hysterectomy and their isolation.—*Amer. J. vet. Res.* 20, 239-241. [Authors' summary modified.] **3313**

A method of protecting lambs from environ-

mental infections by hysterectomy is described. Of 11 lambs from 9 ewes, 7 were reared successfully in sanitary isolation.

WOODWARD, R. R. & CLARK, R. T. (1959). **A study of stillbirths in a herd of range cattle.**—*J. Anim. Sci.* **18**, 85-90. [Authors' summary modified.] **3314**

Stillbirths in beef herds totalled 316 from 8,857 births (3.6%), for the period 1936-57 inclusive. Although there did not appear to be any single major causative factor the following characteristics were noted in the stillborn calves. 62% of the stillborn calves were males.

Live calves were heavier at birth and fell within a narrower birth weight range than did stillborn calves. Significantly more stillborn calves were first births than subsequent births. Significantly more calves were stillborn in an inbred population than in the test herds. Posterior presentation and twinning resulted in a proportionately higher than average percentage of stillbirths.

Few lethal factors (e.g. dwarfism) were identified; positive diagnosis of causative factors was lacking in a number of cases.

GORSKI, J. & ERB, R. E. (1959). **Characterization of estrogens in the bovine.**—*Endocrinology* **64**, 707-712. [Authors' summary modified.] **3315**

Oestrone, oestradiol-17 beta and oestradiol-17 alpha were identified in bovine placental extracts by chromatography on paper, formation of acetates, Kober reaction, bioassay and absorption spectra in sulphuric acid. A compound similar to oestradiol-17 beta was detected in extracts of ovaries from non-pregnant cows but in quantities too low for further identification.

Maternal adrenals and ovaries and foetal adrenals and testes from two cows pregnant 256 and 265 days did not yield detectable quantities of oestrogens. The placenta appears to be the principal source of oestrogens in the pregnant bovine.

EHRlich, J. (1959). Über die klinische Feststellung von Fruchtbarkeitsstörungen bei Zuchtbullen. [**Clinical diagnosis of subnormal fertility in bulls.**]—*Prakt. Tierarzt.* No. 2. pp. 47-50 & 52. **3316**

Of 264 abnormal bulls, 35 had some impairment of the ability to serve, 7 had orchitis, 8 congenital or acquired epididymal defects, 1 vesiculitis, 57 testicular degeneration, and 80 non-specific and 76 specific infection (of which few further details are supplied). Cryptorchid

bulls in Germany are slaughtered on diagnosis. Various forms of testicular hypoplasia are described. In orchitis changes in consistency are typical; the technique of rectal examination of the accessory organs is detailed.

—F. L. M. DAWSON.

POMEROY, R. W. (1959). **Reproduction in the sow, with special reference to infertility and neonatal mortality.**—*Abstr. Diss., Cambridge* 1956/57 pp. 5-6. [Author's abstr. modified.] **3317**

A survey of the life-time performance and reasons for disposal of 1,000 sows showed that the main reasons for disposal were failure to breed and piglet mortality. In young sows reproductive failure was due largely to total embryonic mortality about the time of implantation. In older sows it was frequently associated with cystic ovaries and was mainly due to failure of ovulation or of fertilization.

The development of spontaneous ovarian cysts was studied by observational laparotomy, and attempts were made to resolve the cystic condition by mechanical rupture, by treatment with prolan and with stilboestrol.

The possible relationship between reproductive failure and the nutrition of the sow, particularly at the time of mating, is discussed.

Foetal development in normal pigs and in a strain of pigs characterized by a high incidence of neonatal mortality was compared. In the latter case growth was slower in the second half of pregnancy. A comparison of the growth of the smallest and largest foetuses within litters showed that the undersized foetuses were developmentally retarded: the implications in relation to viability of piglets are discussed, and possible lines of future investigation are suggested.

MCENTEE, K. (1958). **Cystic corpora lutea in cattle.**—*Int. J. Fertil.* **3**, 120-128. [Summaries in French and Spanish.] **3318**

An abattoir survey revealed that cystic corpora lutea were two and a half times as frequent as cystic follicles. Luteal cysts are difficult to diagnose. Cows which develop them have normal-length oestrous cycles but appear to be abnormal at the time of oestrus. It is postulated that luteal cysts are a less severe manifestation of the same basic defect (or defects) that leads to the formation of cystic follicles.

SUNDE, M. L. & BIRD, H. R. (1959). **The effect of pullet maturity on fertility and hatchability of eggs.**—*Poult. Sci.* **38**, 272-279. [Authors' summary modified.] **3319**

Eggs laid by pullets that had just reached sexual maturity did not hatch as well as those laid six weeks later. Fertility was also lower during the early period. A high incidence of early deaths (16% of fertile eggs in one instance) occurred during the first week of incubation. After the pullets had been laying for two months, this incidence dropped to about 5% of the fertile eggs. Of the deaths during the first week of incubation, a high percentage occurred during the first 24 hours. Of the first week's eggs, an average 29.5% of the embryos dying during the first week died during the first 24 hours of incubation. Blood formation had not occurred but there was a distinct proliferation of the cells about the blastoderm.

Hatchability and fertility were normal after the pullets had been in production for two months. In some experiments essentially the same ration was fed from one day of age until the birds had been laying for several months.

The following types of growing and breeding diets were tried without effect: high levels of all known vitamins, unknown growth factors, high levels of an antibiotic, high protein, low protein, high soya bean protein and high animal protein.

FLATLA, J. L., HANSEN, M. A. & SLAGSVOLD, P. (1959). Pityriasis rosea hos gris. [**Pityriasis rosea in pigs.**] — *Proc. VIIIth Nord. vet. Congr., Helsinki*, 1958. pp. 78-84. [In Norwegian. English summary modified.] **3320**

Clinical and histological findings in pityriasis rosea in pigs are briefly described. The aetiology of the disease was studied.

The authors consider that this skin disorder is due to a hereditary disposition, but its appearance is to some extent influenced by environ-

mental conditions.

Evidence was presented that pityriasis rosea is due to an autosomal dominant factor with incomplete penetrance. The question of whether the skin eruptions may depend on more than one pair of genes, is not discussed.

MEIER, H. & YERGANIAN, G. A. (1959). **Spontaneous hereditary diabetes mellitus in Chinese hamster (*Cricetulus griseus*). I. Pathological findings.**—*Proc. Soc. exp. Biol., N.Y.* **100**, 810-815. [Authors' summary modified.] **3321**

Spontaneous diabetes mellitus in Chinese hamsters is described and compared with diabetes in man and experimental animals. Evidence is cited that in Chinese hamsters, the disease is genetically determined. This species should therefore be of value for future study of inheritance of diabetes, screening of hypoglycaemic agents, and metabolic studies.

HEUSCHELE, W. P. (1959). **Cleft palate in lions of one litter—a case report.**—*J. Amer. vet. med. Ass.* **134**, 365-366. [Author's summary modified.] **3322**

Congenital cleft palate occurred in all of 3 lion cubs in one litter. The presumed genetic and environmental factors influencing this anomaly, and the anatomical basis, are discussed.

NES, N. (1959). Spina bifida ledsaget av muskelkontraktus og andre defekter hos kalv. [**Spina bifida accompanied by muscle contracture and other defects in calves.**] — *Nord. VetMed.* **11**, 33-54. [In Norwegian. Summaries in English and German.] **3323**

The defects were observed in 9 calves of the Norwegian Red-and-White breed. Inheritance was discussed.—R.M.

See also absts. 3326 (sex chromatins); 3341 (sheep reproduction); 3345 (climate and sexual function); 3346 (book on reproduction in domestic animals).

ZOOTECHNY

MORRIS, T. R. & FOX, S. (1958). **Artificial light and sexual maturity in the fowl.** — *Nature, Lond.* **182**, 1522-1523. **3324**

It has been demonstrated, and is illustrated in table form, that with initial over-lighting, followed by judicious light withdrawal, sexual maturity in hens can be delayed by about 3 weeks. This results in heavier birds which produce larger eggs and an improved rate of lay which compensates for the 3 weeks' delay in maturity.—IRENE M. DIXON.

HOEKSTRA, P. (1959). De bruikbaarheidsduur van de Nederlandse vrouwelijke rundvee-

stapel. I. - IV. [**The longevity of Dutch female cattle.**] — *Tijdschr. Diergeneesk.* **84**, 134-155; 259-277; 383-398; & 485-500. [In Dutch. Summaries in English, French and German.] **3325**

Data on the removal or disposal of 19,758 cows from 5,799 farms were examined. The average age of 6,976 cows which died or were slaughtered was 6 years 10 months. Reasons for culling were: disorders of the reproductive system (32.4%), disorders of the udder and teats (15%), poor milk yield or poor fat content of milk (11.3%), "old age" (7.2%), disorders of the legs (4.9%), other diseases (20.5%). In

addition the relationship between longevity and age at first lactation was studied in 70,000 cows. Factors taken into account were breed, province, type of soil, type and size of farm, conformation. Results are given in detail.—R.M.

COLOMBO, G. & TOSI, M. (1958). Contributo allo studio della cromatina sessuale nelle cellule delle membrane e dei liquidi fetali nei bovini per la diagnosi prenatale del sesso.

[Sex chromatin in the cells of the placenta of the amniotic and allantoic fluid for prenatal sex-determination in cattle.] — *Clin. vet., Milano* 81, 417-421. [Summary in English.] 3326

Sex chromatin was demonstrable in the cells of the chorionic membrane but not in the cells of the foetal fluids of slaughtered pregnant cows.—T.E.G.R.

TECHNIQUE AND APPARATUS

SOLOV'EVA, V. S. (1959). [Conservation with boric acid of blood samples for serological examination.] — *Veterinariya, Moscow* 36, No. 3 pp. 73-74. [In Russian.] 3327

Blood samples remained suitable for agglutination and complement-fixation tests for 4-6 days when 0.05-0.07 g. boric acid was added to each sample [volume not stated] at the time of collection.—R.M.

See also absts. 3347 (humane experimental technique); 3349 (book on microtechnique).

VAN ROOYEN, P. J. & WEISS, K. E. (1959). The stab-method for inoculation of fertile eggs.—*Bull. epiz. Dis. Afr.* 7, 75-78. [Summary in French. Authors' summary modified.] 3328

Attention is drawn to the practical advantages of the stab method of inoculation of fertile eggs described by other workers, and used at Onderstepoort in the routine mass production of chick-embryo vaccines.

REPORTS

GREAT BRITAIN. (1959). Ministry of Agriculture, Fisheries and Food. Report on the Animal Health Services in Gt. Britain for the year 1957, including Report of Proceedings under the Diseases of Animals Act, 1950, for 1958. pp. 121. London: H.M. Stat. Off. 6s. 3329

The Report is in five parts; Animal Diseases, Regulations to prevent the introduction and spread of disease, Protection of Animals during Transit, Export of livestock and the reports from the Laboratory and Investigation Services, along with two appendices.

There were 184 outbreaks of FOOT AND MOUTH DISEASE in 1957 compared with 162 the previous year; while in France there were 6,815 outbreaks in 1956 and 99,030 in 1957. One third of the outbreaks in 1957 were attributed to infection from the continent.

SWINE FEVER totalled 960 outbreaks, slightly more than in 1956, and nine outbreaks of ATROPHIC RHINITIS occurred, all in Landrace pigs. The nine affected herds comprised 2,621 pigs, all were slaughtered and 362 were actually affected.

Only 318 outbreaks of ANTHRAX occurred, the lowest since 1949. No less than 1,030 outbreaks of NEWCASTLE DISEASE occurred, 78 more than in 1956; 1,130,972 birds were killed and 290,693 hatching eggs destroyed.

The elimination of bovine TUBERCULOSIS continued to make rapid progress and at the

end of the year there were seven and a half million attested cattle in the country. In the attested and eradication areas, all cattle that reacted to the test were slaughtered and their owners compensated. The incidence of reactors in attested herds—outside the attested areas—fell to 0.22% after being between 0.3 and 0.4% for some years previously and in the attested areas even dropped to 0.09%. With the increase of the attested herds the number of cattle slaughtered under the Tuberculosis Order, 1938, fell to 800, the lowest figure ever recorded.

Late in 1956 the practice of slaughtering cattle secreting *Brucella melitensis* in their milk, but without associated human illness, was discontinued. In 1957 the organism was recovered on nine farms.

Fifty-three pages of the report are given over to the work done in the laboratory, including that at Lasswade. Investigations were carried out on brucellosis and considerable progress was made in the routine preparation of the freeze-dried vaccine, on VIBRIOSIS, on JOHNE'S DISEASE and the practical value of its complement-fixation test, although progress is gradual in this slow developing disease.

Of about 6,000 samples examined in connexion with the attested herds scheme and the Tuberculosis Order, 22% were positive. In addition 26 specimens of "SKIN TUBERCULOSIS" were examined.

Increasing refinement of the technique of preparation of synthetic medium for tuberculin production, with closer control, has led intermittently to poor growth and sinking pellicles in the culture flasks. The suggestion by Baisden (U.S.A.) that high purity of asparagine in the medium might lead to lack of essential trace elements, has been confirmed: with incorporation in the medium of a trace-element complex (based on ash analysis of tubercle bacilli) growth was heavy, with no tendency to sink. Work in progress suggests that glycerol may supply trace elements, Zn, Cu and Co being the most active and concerned in the utilization of glycerol. Research also covers numerous other conditions and diseases.

One appendix contains 32 tables and the other details 73 publications by members of the staff. A subsidiary report covers the proceedings under the Diseases of Animals Act. This shows a marked fall to 116 in outbreaks of F. & M. DISEASE and to 167 of ANTHRAX, an increase in SWINE FEVER and a fall of 275 outbreaks of NEWCASTLE DISEASE over the previous year.

—D. S. RABAGLIATI.

GT. BRITAIN. (1958). **Committee for Colonial Agriculture, Animal Health and Forestry Research 1957-1958.** pp. 116. London. Agricultural Research Council. 3330

Collaboration between research in the U.K. and in overseas territories was strengthened by numerous visits by members of the committee and other scientists.

The East African Veterinary Research Organisation made several contributions to the solution of some East African major livestock problems.

Studies on RINDERPEST in East Africa have shown that calves from immune dams have passive resistance which may last for seven months. In outbreaks such calves cannot be immunized until beyond the age when their passive immunity disappears. Supplies of vaccines have improved and their more general use has speeded up the control of the disease. Safer vaccines more easily stored and administered continue to be produced but the requirements for vaccines in East Africa have progressively diminished as rinderpest has been satisfactorily controlled. During the year, 698,600 doses of K.A.G. (caprinized) rinderpest virus vaccine and 665,775 doses of lapinized rinderpest virus vaccine were produced and sold.

The Division of Bacterial Diseases has continued research on BOVINE CONTAGIOUS PLEUROPNEUMONIA and has issued 73,200 doses of avianized pleuropneumonia vaccine.

The new Animal Production Division was established on July 1st 1957, to replace the E.A.V.R.O. section of the Joint Animal Industry Division of the E.A.V.R.O. & E.A.A.F.R.O. which has been abolished.

The Report also includes research undertaken by Colonial Departments of Agriculture, Forestry and Veterinary Services in other parts of the Commonwealth including Antigua, Barbados, Cyprus, Hong Kong, Uganda and Zanzibar.—D. S. RABAGLIATI.

KENYA. (1958). **Department of Veterinary Services annual report 1957.** [MACOWAN, K. D. S.] pp. 89. Nairobi: Government Printer. Sh. 5. 3331

The South African type 2 FOOT AND MOUTH DISEASE virus (SAT.2) was recorded in Kenya for the first time. It was isolated from outbreaks in the Samburu Reserve. The disease spread rapidly throughout the Samburu Reserve up to August, since when no outbreaks have been confirmed. The concurrent presence of "A" and "O" types of virus confused the picture. In October the "C" type virus was isolated. This was new to Kenya but vaccine was imported from Amsterdam and the outbreak contained. By the end of the year further spread had been checked. Apart from the above-mentioned outbreaks there were waves of type "O" infection in other districts. The disease interfered with the flow of slaughter stock from the African areas.

LUMPY SKIN DISEASE was recorded for the first time in December 1957. All clinically affected cattle were slaughtered.

TRYPANOSOMIASIS — Reclamation work, coupled with prophylactic drug treatment, is reflected in the reduced incidence of trypanosomiasis in the settled area of Nyanza Province. In 1954 there were 750 cases, in 1957 only 10. Extensive field trials, using various prophylactic and curative drugs, were continued in the African reserves and the demand for these drugs continues to increase.

The policy of maintaining a high level of immunity to RINDERPEST by compulsory mass immunization of susceptible cattle in African areas was continued. Outbreaks occurred in the Northern Province, the Coast Province and in Masailand among calves.

BOVINE CONTAGIOUS PLEUROPNEUMONIA is confined to Masailand where 945,000 cattle were inoculated in 1956 and severe reactions occurred in 7% with a mortality of 1%. At the end of 1957 only 5 new foci were reported as compared with 20 foci in 1956.

TUBERCULOSIS: of 91 imported cattle tuberculin-tested, five were doubtful reactors and

awaiting re-test at the end of 1957. The only other confirmed cases of TB. were in a steer from the Central Province and a camel at a field abattoir in the Northern Province.

The complement-fixation test for JOHNE'S DISEASE was in use for routine diagnosis and has revealed the disease in widely separated areas of the country. Experimental immunization of calves, subject first to a satisfactory tuberculin test, was authorized on two farms in Sotik district.

There were no cases of RABIES in Nyanza Province for the first time for many years. The disease occurred in the Central and Southern Provinces, in a dog first, in a cat and in an African child that died. Another African child died from rabies in the Machakos District.

TICK-BORNE DISEASES OF CATTLE. 63 farms were infected with EAST COAST FEVER in the Uasin Gishu District. East Coast fever has spread in Masai districts and mortality was heavy. Dip resistance by *Boophilus decoloratus* ticks has been a serious problem.

Improved diagnostic techniques have shown the incidence of TRICHOMONIASIS and VIBRIOSIS to be high, especially in the Rift Valley Province.

The Pilot Scheme for accrediting herds as free from CONTAGIOUS ABORTION was held up as previous inoculation with contagious abortion vaccine interfered with the test.

ANTHRAX and BLACKLEG occur sporadically. Human mortality occurred (among Africans eating anthrax-infected meat). Africans are reluctant to use prophylactic vaccines.

Other diseases of bovines mentioned are LEPTOSPIROSIS, ONDIRITIS (bovine petechial fever) and RIFT VALLEY FEVER.

Poor husbandry resulted in outbreaks of CALF PARATYPHOID, PNEUMO-ENTERITIS, COCCIDIOSIS, RINGWORM and PNEUMONIA. HELMINTHIASIS remains a problem. LIVER FLUKE infestations were widespread. CYSTICERCOSIS is of major importance to the beef industry. The problem is being studied by a Joint Commission of Veterinary and Medical representatives.

Parasitic skin affections are common in sheep and goats in the African areas. Dipping is increasingly popular. In the European areas BLUETONGUE, PULPY KIDNEY, ENTERO-TOXAEMIA, ENZOOTIC TOXAEMIA, ENZOOTIC PNEUMONIA and RIFT VALLEY FEVER were all reported. CAPRINE CONTAGIOUS PLEUROPNEUMONIA caused heavy mortality in the Northern Province.

In horses ULCERATIVE LYMPHANGITIS occurred near Nairobi. AFRICAN HORSESICKNESS, BILIARY FEVER and UASIN GISHU SKIN DISEASE occurred sporadically.

There were no SWINE FEVER outbreaks. SWINE ERYSIPELAS occurred, but there was little mortality.

There was a major outbreak of NEWCASTLE DISEASE in Nairobi; the incidence was low elsewhere. There were no cases in the Coast Province, where the disease had been endemic.

Other diseases of poultry dealt with were COCCIDIOSIS, FOWL CHOLERA, FOWL PARALYSIS, LYMPHOMATOSIS, CORYZA, LEUCAEMIA and parasitic conditions.

The inoculations in the settled areas were;— F. & M. DISEASE Type "O" 2,797,597; Type "A" 945,074; Type "C" 34,186; RINDERPEST (K.A.G. and lapinized virus) 113,383; RABIES 5,037.

Inoculations in the African areas (grand total) were:— RINDERPEST 757,069; ANTHRAX 148,349; BLACKLEG 294,359; HAEMORRHAGIC SEPTICAEMIA 4,870; F. & M. DISEASE Type "O" 616,188; Type "A" 78,810; RABIES 24,009; TRYPANOSOMIASIS: 81,604 given antrycide methylsulphate; 9,292 antrycide pro-salt; 64,304 dimidium bromide; 84,012 ethidium bromide; 18,360 stibophen; 4,636 berenil; bovine pleuropneumonia 940,987.

Sections of the report deal briefly with the work of the Meat Inspection, Research Laboratory and Zoological Services; Animal Husbandry and Livestock Improvement; Trade in Livestock and Animal Products; Publications, Legislation and Statistics.—J. A. GRIFFITHS.

TANGANYIKA. (1959). Annual report of the veterinary department for the year ending 31st December, 1957. Vol. II. pp. 50. Dar Es Salaam: Govt. Printer. Shs. 4/50. 3332

The report is divided into 15 parts, including reports on veterinary research, veterinary education and one on the veterinary research farm and two appendices. The pasture research was transferred from the veterinary dept. to the department of agriculture.

For diagnosis, 7,498 slides were examined for TRYPANOSOMIASIS in addition to large numbers in connexion with experimental work, such as drug trials. In the routine diagnosis work, 730 specimens were examined as compared with 270 the previous year. Of 415 samples of blood or milk tested for BRUCELLOSIS 98 were positive and 3 doubtful. Of 23 specimens examined for RABIES 12 were positive. Only one showed "typical" Negri bodies; all the others showed atypical forms, even when sub-inoculated into mice and the mice allowed to die, these atypical forms persisted.

RINDERPEST was diagnosed in wildebeest

and buffalo and three outbreaks of FOOT AND MOUTH DISEASE occurred.

Research was carried out on rinderpest and rinderpest-like diseases and the influence of cortisone on the susceptibility of zebu cattle to Kenya attenuated goat virus.

The Department's course for veterinary assistants was continued and the capacity of the school was doubled so that 24 students could be taken every year. The course includes animal husbandry and management, poultry husbandry, pasture management and soil conservation, physiology and anatomy of animals and basic pathology, animal diseases, microscopy, meat inspection, and elements of treatment and control of disease.—D. S. RABAGLIATI.

REPUBLIC OF IRELAND. (1958). [Report of] **Veterinary Research Laboratory [1957-58].**
—Rep. Minist. Agric. Republic of Ireland, 1957-58. pp. 69-78. **3333**

For TUBERCULOSIS 1,950 specimens were examined (965 from local authority veterinary inspectors, 918 milk samples and 67 miscellaneous specimens). Of the milk samples 24 were positive on microscopic examination. The biological test was carried out on 154 samples of which a further six (3.267%) were positive.

Out of 21 blood swabs examined for ANTHRAX only one proved positive.

Post-mortem examinations were made on 76 sheep, 67 lambs, 17 cattle, 9 pigs and 3 dogs.

In the parasitological section trials were initiated to evaluate the lethal action of an organic phosphorus compound on migrating WARBLE FLY larvae. 221 cattle were used. The experiments were not conclusive but preliminary results were encouraging.

85,820 doses of BLACKLEG vaccine, 30,805 of BRAXY vaccine and 769 doses of CONTAGIOUS ABORTION vaccine were produced.

The bacteriological section examined 194 samples of milk for MASTITIS and the advisory service 561 samples, the majority of which were taken as a routine check on mastitis.

Infectious SCOURS continues to be the greatest cause of early mortality in calves. The widespread use of antibiotics for the control and treatment of the condition has resulted in the emergence of antibiotic-resistant strains. Studies of this problem and its significance especially in relation to certain of the broad spectrum antibiotics of the tetracycline group, which were indicated in the previous year, were continued.

—D. S. RABAGLIATI.

NETHERLANDS. (1958). De Gezondheidstoestand van de veestapel in 1956 en 1957. [Livestock health in 1956 and 1957. Report of the Director of the Netherlands Veterinary Service.] [VAN DEN BORN, J. M.] pp. 63. Nederlands: Staatsdrukkerij Uitgeverijbedrijf. **3334**

These reports contain notes on all the main diseases of farm animals and poultry. The virtual eradication of BOVINE TUBERCULOSIS in the Netherlands is shown by the figures for the year ending May 1957, when 4,890 reactors were found among more than 2,500,000 cattle tested (0.19%). The reactors were slaughtered and TB. lesions were found in 1,380 animals: an additional 407 cases of TB. were found during the slaughter of apparently healthy cattle. The incidence of reactors during the previous year was 0.5%.—R.M.

BOOK REVIEWS

AINSWORTH, G. C. & AUSTWICK, P. K. C. (1959). **Fungal diseases of animals**, pp. 148. Farnham Royal: Commonwealth Agricultural Bureaux. Review Series No. 6 of the Commonwealth Bureau of Animal Health. 20s. **3335**

Within the last few years there has been a considerable increase in interest in veterinary mycology. This interest has often been impeded by the absence of a handy reliable book of reference. This is now available.

It is written by two people who are masters of their subject and have produced a concise but comprehensive review. Their own experience has enabled them to be critical of the literature reviewed and they have, where applicable, included findings from their own researches.

There is an excellent index and bibliography and many illustrations of macroscopic and microscopic lesions in colour and black and white.

The review of literature ended at the end of 1957, and thus there is no reference to the uses of griseofulvin in the control of certain dermatophytes. It is hoped that this will be remedied in a future edition.

The book is written in a lucid style making it of value not only to those intimately associated with the subject matter but also to those who may need it only for occasional reference, or to those who are studying the subject *de novo*, and its price makes it a "good buy".

—J. A. J. VENN.

ELEK, S. D. (1959). **Staphylococcus pyogenes and its relation to disease**. pp. vii + 767. Edinburgh (& London): E. & S. Livingstone Ltd. 84s. **3336**

This monograph is concerned with the bacteriology of pathogenic staphylococci and with the processes by which these organisms are disseminated and by which they produce disease. Taxonomy, morphology, metabolism, antigenic structure, staphylophages and the various toxins and other products of the staphylococcal cell are dealt with. There is a short but useful chapter on the effect of physical agents, while antiseptics, chemotherapeutics and antibiotics are treated more fully.

The author excludes from consideration the many clinical descriptions of staphylococcal disease and seeks to deal with staphylococci of animal origin only in so far as they may be communicable to man. In this last respect he is misleading when he states that bovine staphylococci in milk often cause food poisoning. Steede & Smith (1954), the authors quoted in support of this statement, themselves say this is "relatively very rare". There are a few references to veterinary work which are intended to illustrate the applications of various microbiological techniques in this field rather than to deal with the subject exhaustively.

This is a work of great erudition. Anyone wishing to make himself familiar with the literature up to the middle of 1957 on any aspect of the bacteriology of staphylococci or the association of staphylococci with disease, need only refer to this book, where he will find references to the relevant work and an objective assessment of it. The bibliography of 188 pages gives an indication of the thorough and comprehensive way in which the subject has been treated, and, together with subject and author indexes, makes reference to any of the subject-matter easy.—IAN DAVIDSON.

RHODES, A. J. & VAN ROOYEN, C. E. (1958). **Textbook of virology for students and practitioners of medicine**. pp. xv + 642. London: Baillière, Tindall & Cox. 3rd Edit. 80s. **3337**

The authors of this excellent textbook state that their object was to present the essential features of virus and rickettsial diseases of man in a form suitable for undergraduate and post-graduate students of medicine, bacteriology, virology and public health.

From the veterinary viewpoint, the only animal diseases described are those common to both man and animals, each apportioned according to its severity for man.

The text, with high quality print, paper

and binding, is divided into sections subdivided into chapters on specific virus diseases.

Section One deals with the various aspects of the fundamentals of virus infections of man and animals and contains much information which the student of virology should find most helpful.

Other sections deal respectively with skin diseases, exanthemata, respiratory, venereal, eye diseases, arthropod-borne and tropical fevers, infectious hepatitis and serum jaundice, Cocksackie infections, encephalomyocarditis and encephalomyelitis of animals, neurotropic and rickettsial infections.

The section on c.n.s. viruses is the largest, comprising some 160 pages. These viruses are subdivided into those secondarily neurotropic to primary localization elsewhere, and those primarily neurotropic.—J. H. DARBYSHIRE.

MOZLEY, A. (1959). **Ecological processes**. pp. xi + 68. London: H. K. Lewis & Co. Ltd. 9s. **3338**

This book with the title "Ecological Processes" is a further addition to a series which already extends to six volumes. With such a title there was a possibility that the subject matter would be vastly different from that in the other volumes, but this is not so. Many of the examples cited concern molluscs and habitats details of which have been given before. Furthermore, in a book of this size it is not possible to include so many quotations from other workers without loss of balance and continuity. As a result, the book gives an impression of being no more than a collection of isolated observations and thoughts on molluscan ecology. This is a pity for there are parts of this book which reveal that the author has a wealth of material at his disposal to interest his readers. It would be pleasant to read an account of his experiences whilst searching for snails in many different countries; we are informed in this book that other volumes are in preparation—perhaps one of them will recount these experiences.—C. B. OLLERENSHAW.

FISCHER, W. & KÜHL, I. (1958). **Geschwülste der Laboratoriumsnagetiere. [Neoplasms of laboratory rodents.]** pp. xi + 260. Dresden (& Leipzig): Theodor Steinkopff. DM 25.50. **3339**

This is volume 6 of a series of monographs "Beiträge zur Krebsforschung". The authors have reviewed the literature on important spontaneous and experimental tumours of laboratory rodents, in particular of the mouse, rat, rabbit and guinea-pig. There are occasional references to tumours of domesticated animals, and some

relevant comparisons with human tumours. The chapters by Fischer deal with tumours of the respiratory and cardiovascular systems, liver, bones and muscles, brain and spinal cord; those by Kühl with tumours of the alimentary, urinary, male and female genital systems, mammary gland, thyroid, adrenals, thymus, haemopoietic and reticulo-endothelial systems, and skin. Further chapters by F. concern ascites sarcoma of rats, Ehrlich ascites carcinoma, aspects of morphological variations of tumours, tissue reactions to spontaneous and experimental tumours, and resistance and immunity.

There are lists of references in the various chapters: the reason why some articles appear not to have been consulted in the original is not always clear. There are 155 illustrations, of which all except three are photomicrographs.

Sometimes names, chiefly in the index, are wrongly spelt, for example; the following are incorrect: Tauck, Cuning, Stuart, Ten Theje, Whithead, Woodward, Pazor, Zschooke. Some authors' initials are wrongly given. Two names in the index surely refer to non-existent authors (Cancer, J. and Chiels)? The dog cannot be affected with carcinoma of the fore-stomach (p. 11). The first sentence of chapter 3 suggests that tumours occur in the liver of mice affected with *Cysticercus fasciolaris*. Sertoli-cell tumours are not mentioned in the reference to canine testis tumours on p. 72, although they may be more common even than seminomas.

The book does not claim to be a complete account of all aspects of tumours in laboratory rodents, but it is a useful review, and would be of interest to all working with these animals, not merely to those engaged in cancer research.

—E. COTCHIN.

— (1959). **Scientific principles of feeding farm live stock. Proceedings of a conference held at Brighton 11-13 November 1958.** pp. viii + 259. London: Farmer & Stock-Breeder Publications Ltd. 50s. **3340**

The terms of reference of the conference were to assess the state of knowledge concerning nutrient allowances and margins of safety for farm livestock in the U.K. in relation to reproduction, growth, and production of meat, milk, wool and eggs. Accurate and up-to-date information in respect of dairy cows, calves, beef cattle, sheep, breeding and rearing pigs, growing-fattening pigs, rearing and table birds and laying and breeding birds is presented; each paper has a good bibliography and there is a useful subject index. The book will be of great

value to research workers and students and to all who are associated with the feeding of farm animals.—E.V.L.

THOMSON, W. & AITKEN, F. C. (1959). **Diet in relation to reproduction and the viability of the young. Part II. Sheep: world survey of reproduction and review of feeding experiments.** pp. 93. Farnham Royal: Commonwealth Agricultural Bureaux. Technical Communication No. 20 of the Commonwealth Bureau of Animal Nutrition. 30s. **3341**

The book is in two distinct parts of which the first is an attempt at a world survey of reproduction efficiency in 66 pages, of which 46 are tables. Thompson and Aitken have had a difficult problem, since the reports vary so enormously in the statistical bases adopted, (e.g. percentage of lambs born *or* weaned may relate to ewes mated *or* lambled, and infertility is often high).

Some interesting general conclusions precede the tables which include data from 14 European countries, three large areas each of Asia (mostly Russian data), and America, and four of Africa—here only the South African (Union) data seem of much value. Finally data from Australia and New Zealand are relatively copious.

The second part, 27 pages long, is entitled "Diet in relation to fertility, reproduction and lactation", and is a general review subdivided into the effect of plane of nutrition and the effects of certain specific nutrients. It seems to be true for most parts of the world, that improved feeding during all or any of the time from birth to end of the first lactation, improves reproductive performance. Regarding specific nutrients, only a few papers on calcium and phosphorus are reviewed; the possibility of pre-conceptional infertility in this connexion (as in cattle) is not considered. Cobalt, copper, vitamins A and E and iodine are discussed, but not manganese or iron. Recommended allowances of the various dietary constituents are given in some detail. The probability that significant breed variations in feed conversion rates may exist is not taken into account here.

The final sections deal with adverse effects of pasture oestrogens and goitrogens. One cannot agree that the evidence on the oestrogenic potency of ladino clover is inconclusive. Some important German work on plant oestrogens is ignored and possibly too much stress is laid on genistein as the major oestrogen involved. Coumestrol is twenty times as potent. Both oestrogens and goitrogens occur in some red clovers.

The authors are to be congratulated on successful completion of a laborious task, which will greatly simplify the difficulties of others in finding their way about an exceedingly heterogeneous literature.—F. L. M. DAWSON.

MÜLLER, P. [Edited by.] (1959). **DDT. The insecticide dichlorodiphenyltrichloroethane and its significance. Vol. II. Human and veterinary medicine.** pp. 570. Basle (& Stuttgart): Birkhäuser Verlag. Swiss Fr. 66. **3342**

The first 12 chapters, by W. J. Hayes, review the pharmacology and toxicology of DDT, covering residue problems, pathology, physiology, exposure risks, etc. In the next 11 chapters the section editor, S. W. Simmons, discusses the use of DDT against arthropod vectors of human disease and there is a useful chapter on resistance mechanisms. E. F. Knippling evaluates DDT as a veterinary insecticide in the final 6 chapters; mammalian toxicity, formulations, methods of application and the control of specific arthropods are all dealt with. The volume is well produced and includes over 1,550 references.

—W. N. BEESLEY.

ANNISON, E. F. & LEWIS, D. (1959). **Metabolism in the rumen.** pp. 184. London: Methuen & Co. Ltd. (New York: John Wiley & Sons Inc.) 15s. **3343**

This monograph was written while the authors were on the staff of the biochemical department of the Agricultural Research Council's Institute of Animal Physiology at Babraham. It gives a most comprehensive account of the advances made in this subject during the last 20 years. The title emphasizes the most interesting feature of the ruminant, namely that digestion of food in the non-glandular parts of the stomach is the result of the metabolism of the bacteria and protozoa that inhabit them. Digestion can be defined as the preparation of ingested food for assimilation by the animal. To a large extent this is exactly what happens in the rumen but because the preparation is the result of the metabolism of unicellular micro-organisms which themselves form one of the products, it is a great deal more complicated than secreted alimentary juices.

Some 70% of the materials digested are absorbed in the stomach which is a fair indication of the importance of this organ and of the rumen which is by far the largest part of it. General features, such as these, are described in a short introductory chapter which is marred only by a misleading arrow in Fig. 1 which suggests that food, re-swallowed during rumination, passes *via* the oesophageal groove to the omasum

and abomasum although it is clear from the text that it returns again to the reticulum and rumen. The microbiology of the rumen is considered in some detail and the authors avoid giving a long and uninteresting catalogue of organisms; instead they describe only those which can be fitted securely into the general picture on account of the numbers present and their biochemical properties. The use of various types of artificial rumen to study the mixed culture present in rumen contents over short periods is discussed. The third chapter deals with the fermentation of carbohydrates and with the intermediary stages of fermentation as far as they are known. The most striking feature is that, whatever the food, the end products of fermentation are qualitatively the same although quantitatively the proportion of one acid to another varies. An exception to this is lactic acid which accumulates only under fairly well defined conditions and is not stable. The fourth chapter discusses fully the metabolism of proteins and other nitrogen-containing constituents of the food. The conversion of dietary nitrogen and salivary nitrogen to microbial nitrogen is one of the most interesting phases of metabolism in the rumen and is important in the nutrition of the host, especially when protein supplies are short. This subject is fully discussed together with the difficulties of determining the relative values of different protein for ruminants. Chapter 5 on absorption from rumen discusses the available information on fatty acid uptake and ion exchange across the stratified squamous epithelium. Ideally from a nutritional point of view it is desirable to measure in conscious fully fed animals the quantities of the various nutrients entering the portal blood stream. The difficulties of doing this are discussed; useful comparative results have been obtained by the use of "London" cannulae and plastic tubing inserted into the portal vein. Both techniques will have to be made considerably more certain in their application before they can be widely used. Knowledge of the portal blood flow is essential in order to make quantitative assessments. The absorption of lactate or lactic acid directly from the rumen is considered to be established but the evidence quoted is not conclusive. It is an oversimplification to consider the membrane formed by the rumen epithelium as a semi-permeable one for the existing evidence strongly suggests it is a selective membrane.

The last chapter describes the energy metabolism of the whole animal and provides information on the value of the short-chain fatty acids to the ruminant; it also discusses the implication of digestion in the rumen for the animal

and considers the particular susceptibilities of the domestic ruminant to various illnesses that arise in or which are associated with the rumen. All the work in the monograph is based on the domestic ruminant and, no doubt, can be applied widely to non-domestic ruminants, but here some discrimination is necessary. The statement that ruminants are poorly adapted to hot climates can hardly be true when the abundance of wild ruminants found in tropical and semi-tropical climates is considered, although it is certainly true that the European breeds of cattle bred for high production deteriorate in tropical climates.

The main body of this book quite overwhelms these and a few other criticisms. It is the only up-to-date account of the rumen available in book form. It is clearly written and the style is easy to read. It is a book that should be read by all veterinary and agricultural students, and by others who wish to be informed on this aspect of biology for although the substance is mostly biochemical, it is treated in a biological way. The text is supported by Tables of experimental data and by diagrams and each chapter is annotated. The authors do not claim that the bibliography is exhaustive but it does give a useful guide to the literature.

—A. T. PHILLIPSON.

SMYTHE, R. H. (1959). **Clinical veterinary surgery. Vol. 1. General principles and diagnosis.** pp. x+362. London: Crosby Lockwood & Son. Ltd. 42s. **3344**

"It is easier to criticise than to write". This thought has been prominent in the reviewer's mind when dealing with "Clinical Veterinary Surgery". Clinical competence and ability to write are qualities rarely possessed by one individual. Mr. Smythe evidently has both attributes but he has had obvious difficulties over this first volume. Thus, he appears not to have enjoyed extensive library facilities; he has given his own opinions—a prime requisite of a clinical book—but he has not sought widely in the literature for the views of others. Consequently, on many subjects, the treatment is too superficial and not sufficiently informative. One has the impression that the book was written too hurriedly for the proper development of many portions of the text. The author has had too little aid over the illustrations. He has had apparently no expert artistic help and small access to radiographic and photographic illustration. If he had worked in a hospital, college or university department, he would have been much more advantageously placed. In the light of these

difficulties therefore, the work is a most praiseworthy effort.

In trying to assess the book it must be viewed against the sparse background of British veterinary clinical literature. There are many gaps in this background, particularly on the surgical side; the writer has tried to fill one of them and, in the preface, promises a further volume. As a text-book the work fails. It will not meet the needs of the modern student of veterinary surgery. At the same time, the book is a work of real value that should be read by all students. There is no doubt it will be read, first because there is little else of a similar kind and secondly because it makes enjoyable reading. The author has a refreshing literary style in which much information is given in a manner easy to understand, but at the same time he is stimulating and logical. In a rather subtle way he bridges the gap between morbid anatomy and clinical veterinary surgery. Anyone, of average intelligence, can understand the principles of pathology, but pathology is only important as a subject when it can be applied to, and recognized in, the living animal. Only a person with a thorough grasp of his subject and with an understanding of the mind of the student can transform pathology from dead and fixed components into live and dynamic processes. There is no doubt that the author is a born teacher.

In ten chapters the work comprises general principles of surgery, the skin and its surgical affections, neoplasms, fractures, lameness, and the surgical affections of the alimentary, urinary and reproductive systems. Space accorded to various subjects is not always apportioned according to importance. The method of treatment of the various aspects is not constant; in some cases there is detailed treatment, in others the reader is frustrated by lack of information. There is much material from recent sources in the book and there are many interesting and very practical contributions that will not be found elsewhere.

The volume contains many errors, for example the statement that prolapse of the vagina "is due to excessive production of oestrogens during parturition"; again without reference to species, such phrases as "*Eustrongylus gigas* may invade the kidney in some countries" are hardly helpful; and when the author referred to "every bovine clinician", the reviewer had to smile.

To sum up, the work should be regarded not as a text-book but as one very readable source of information on veterinary surgery. The author should be congratulated on his

industry, for his genuine attempt to educate his practising colleagues and for his obvious concern for the modern veterinary student.

—G. H. ARTHUR.

LEIDL, W. (1958). *Klima und Sexualfunktion männlicher Haustiere. Untersuchungen über den Einfluss der Jahreszeit und des Wetters. [Climate and sexual function in male domestic animals, Influence of season and weather.]* pp. 142. Hannover: M. & H. Shaper. DM 24. **3345**

The first 54 pages of this book are a broadly-based introduction to the author's own researches. A comprehensive view is taken and interesting data are given on variation in wild species; notes on the dog, cat and man are included as well as the horse and food animals. Births tend to rise to a peak in April and May except in man where the peak occurs in February, with a secondary in September. In 14 and 55 pages respectively Leidl's researches on the goat and bull are described. In the goat pH, motility and density of semen, spermatozoa production capacity and fructose concentration were studied. In the bull the possible correlations of fructose variation with fertility, breed, feeding and method of collection were investigated. The fructose concentration rose to a peak in August–September, that of the breeding season in nature. There was no correlation with any of the factors mentioned, but good correlation was obtained with weather conditions, fructose proving high in changeable and low in settled fine weather. A histological study was made on Leydig cells and seminal vesicles in cattle and goats. A fat reaction was detected in the basal gland cells of the vesicles which paralleled the fructose fluctuations.

The bibliography includes 188 references of which about 75 each are to papers in English and German respectively. There are many graphs and tables. The tables relative to human vital statistics occupy disproportionately much space. There are some good quality photographs of seminal vesicles. This is a decidedly competent work, and it is a pity the publishers have given it such narrow margins and crowded chapter endings and heads.

—F. L. M. DAWSON.

COLE, H. H. & CUPPS, P. T. [Edited by.] (1959). *Reproduction in domestic animals. Vol. I.* pp. xv+651. New York (& London): Academic Press. \$14.50. **3346**

The book is written for undergraduate students, research workers and veterinary clinicians. Probably only one chapter of this first

volume will interest the clinician. Research workers will find the book useful for reference to aspects just outside their own specialities, and the student will find it a treasure-house if discriminately read. Of the 18 contributors to this first volume only 4 appear to be veterinarians; one is British, two Australian, and 15 American. (A summary of the second volume's contents is included; here 6 of the 11 chapters are by European workers and the scope embraces more matter of direct veterinary, including clinical, interest.) About 90% of the present volume relates to normal endocrinology, including that of the horse, ox, sheep, goat, pig and dog, but in the first 150 pages the domestic animals are hardly mentioned. The chapters on developmental anatomy and the roles of pituitary and gonadal hormones must of necessity be based on work done on laboratory animals, but the strong interest in human endocrinology could surely have been omitted as it has been well done by C. W. Turner in his excellent chapter on the role of thyroid and adrenal hormones. W. Hansel's chapter on the oestrous cycle of the cow is a well-documented and competent summary, but with some bias towards the American literature. Exception must also be taken to Hansel's statement that corpus luteum expulsion is too dangerous to be used as a routine procedure. The evidence is against the belief that infertility-producing adhesions tend to be so caused, while serious subsequent haemorrhages probably occur only in 'haemophilic' cows with abnormally low prothrombin levels.

The chapters on the cycle in females of the other species, fertilization and early embryonic development, implantation and foetal membranes are interestingly written. That on gestation length and parturition is perhaps the best-documented in the book, and the final one by Meites, on mammary growth and lactation, including induced lactation, brings the reader down from the academic heights into contact with economic animal husbandry. Hence this is the chapter which will be of most interest to the veterinary and agricultural reader; it is also fully up-to-date and scholarly.

An alphabetical index to all the references in the chapter-lists is appended, an excellent idea too seldom carried out by publishers. It includes something like 1,600 authors' names; a number of them represented by quite extensive series of papers, not always consistent with the quality of the work. The practice of referring to sources, in the text, without the year of issue, is a little confusing where several papers by one author have been cited.—F. L. M. DAWSON.

SCHILLER, M. (1959). Die Kennzeichen des Pferdes. Farben, Abzeichen, Zahnalter und Brände. [*Identification of horses.*] pp. v+48. Jena: Gustav Fischer. DM 5.70. 3347

A handy, profusely illustrated little book describing identification markings on head, limbs and body of horses, the main colour varieties, and common brands in use in Germany. There is also a chapter on the determination of age by the teeth.—E.G.

BOSTOCK, F. (1957). *Pig husbandry in Australia*. pp. 259. Brisbane: Jacaranda Press. 63s. 3348

This book contains no new information but is a very comprehensive account of pig husbandry in Australia which should be invaluable to any farmer in Australia who intends keeping pigs.

The first chapters deal with Breeds and Breeding and it will be noted that the common breeds are the Berkshire, the Large White, the Tamworth and the Wessex Saddleback. Chapters follow on Improvement and Selection, Care and Management, and Identification. There are chapters on the Management of the Boar and Sow, of the Sow and Litter, and on the Rearing of Motherless Pigs. There is a chapter on the Trade Classification of Market Pigs and one on the Preparation of Pigs for Show. The following other subjects have chapters—Dentition, Carcass Appraisal, the Bacon Pig, Sanitation in Pig Raising, Shade Trees and Windbreaks, Accommodation, Feeding of Pigs, Castration of Pigs, Bacon Curing on the Farm and finally a chapter on Source of the Common Diseases.

There are numerous illustrations and dia-

grams. It is a book for the agriculturalist rather than the veterinarian but is interesting as a comparison of British with Australian pig farming, which is still in its infancy.—P. L. SHANKS.

BAKER, J. R. (1958). *Principles of biological microtechnique. A study of fixation and dyeing*. pp. xv+357. London: Methuen & Co. Ltd. 45s. 3349

This book sets out to analyse and explain the processes involved in the fixation and staining of cells and tissues, and to discuss the properties of the reagents in common use. The reactions discussed are often so complex and the possibilities of variation so great, that direct analyses are difficult and in their assessment personal prejudice has often played a greater part than it should. Nevertheless the author has achieved a nice balance between fact and theory and many aspects for research are suggested.

He bases his discussions firmly on a wide survey of the literature and in some cases, as with the chapter on blood dyes, an almost historical approach has been made which makes very interesting reading.

Probably one of the most valuable parts of the book is the section on fixation. Emphasis is laid upon the considerable changes which may accompany the application of standard methods of fixing and embedding tissues and an attempt is made to assess them objectively. Three chapters which are devoted to the classification of fixatives and dyes provide useful reference data.

The final chapters include a short practical course giving a systematic practical introduction to basic principles likely to be useful to many students.—L. P. JOYNER.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

BOLZ, W. (1959). Lehrbuch der allgemeinen Chirurgie für Tierärzte und Studierende. [*Text-book of veterinary surgery.*] pp. xv+516. Stuttgart: Ferdinand Enke Verlag. 3rd revised edit. DM 69.

KUMMER, B. (1959). Bauprinzipien des Säuger-skeletes. [*Functional anatomy of the mammalian skeleton.*] pp. xi+235. Stuttgart: Georg Thieme. DM 45.

LLOYD, C. W. (Edited by) (1959). *Recent progress in the endocrinology of reproduction.*

Proceedings of the conference held in Syracuse, New York, June 9-12, 1958. pp. xi+532. New York (& London): Academic Press Inc. \$12.00.

STEPHENSON, H. C. & MITTELSTAEDT, S. G. (Edited by) (1959). *Veterinary drug encyclopedia and therapeutic index. A listing of veterinary drugs, biologicals and foods, and feed additives of American manufacturers.* pp. lxix+474. New York: Drug Publications, Inc. 7th Edit.

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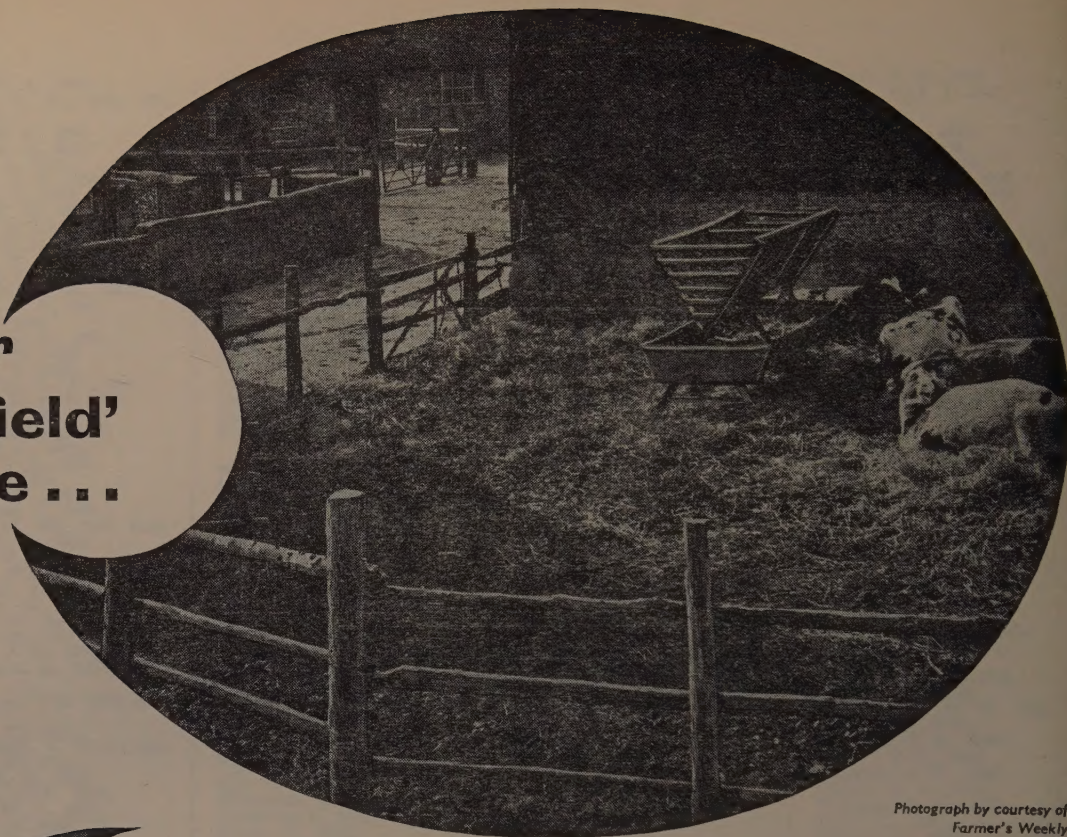
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ABBREVIATIONS OF NAMES OF PUBLICATIONS

The abbreviations used in *Index Veterinarius* and *The Veterinary Bulletin* are those of the *World List of Scientific Periodicals published in the years 1900-1950*, 3rd Edit. (1952), London: Butterworths Scientific Publications.

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HOUNSLOW · MIDDLESEX.

Tel: Hounslow 2361
1014